Scopus

Documents

1) Elakkiya, B., Saraniya, O.

A comparative analysis of pretrained and transfer-learning model for automatic diagnosis of glaucoma
(2019) *Proceedings of the 11th International Conference on Advanced Computing, ICoAC 2019*, art. no. 9087297, pp. 167-172. Cited 4 times.

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Government College of Technology (Anna University), Electronics and Communication Engineering, Coimbatore, India

Abstract
In the recent years, glaucoma is the most generally spotted eye disease in the human that suddenly leads to loss of vision. The glaucoma occurs due to the intraocular pressure in the optic nerve, which averts the transmission of information from the optic nerve to brain. In the current scenario, the medical field has achieved the rapid changes due to the advancement of Artificial Intelligence (AI) technology. Deep Learning (DL) is one of the subfamily of AI, which assists to diagnose the disease in the short interval of time with better accuracy results. The Computer Aided Diagnosis (CAD) is a very effective tool, which helps the physician to diagnose and analyze the disease in an easier manner. In the proposed work, a transfer-learning model designed to diagnose the intra ocular pressure in the optic nerve. This model provides the better validation accuracy of 91.2% with minimized loss function. The training data are obtained from publicly available datasets such as DRIVE, ORIGA and RIM ONE. Using the transfer learning model, the overall training time has been reduced considerably because they are already trained in the millions of images and the inter observability error is minimized. © 2019 IEEE.

Author Keywords
Convolutional Neural Networks (CNN); Deep Learning (DL); Glaucoma; Pretrained network; Transfer learning model

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2) Akash Pavan, S., Periyasamy, S., Vikram Karthik, S.S., Gopalakrishnan, A.

Microgeometry Optimization of Spur Gear for Electric and Hybrid Vehicle Applications
(2019) *2019 IEEE Transportation Electrification Conference, ITEC-India 2019*, art. no. 9080790, . Cited 1 time.

DOI: 10.1109/ITEC-India48457.2019.ITECIndia2019-155

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

Abstract
A new spur gear design providing less transmission error and increased life for electric and hybrid Vehicles, adaptable to high initial torque and reverse loads due to regenerative braking. The teeth of the spur gear profile have specific micro-geometry modifications for the mentioned application. The paper includes contact analysis for designing the profile modified spur gears having preferred running characteristics and optimization through design of experiments. © 2019 IEEE.

Author Keywords
Contact Analysis; Electric Vehicles; Microgeometry; Spur Gear Optimization

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3) Veerasamy, V.[a] , Abdul Wahab, N.I.[a] , Ramachandran, R.[b] , Vinayagam, A.[c] , Othman, M.L.[a] , Hizam, H.[a] , Satheeshkumar, J.[b]

Automatic load frequency control of a multi-area dynamic interconnected power system using a hybrid PSO-GSA-Tuned PID controller
(2019) *Sustainability (Switzerland)*, 11 (24), art. no. 6908, . Cited 36 times.

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Abstract
This paper proposes a new population-based hybrid particle swarm optimized-gravitational search algorithm (PSO-GSA) for tuning the parameters of the proportional-integral-derivative (PID) controller of a two-area interconnected dynamic power system with the presence of nonlinearities such as generator rate constraints (GRC) and governor dead-band (GDB). The tuning of controller parameters such as Kp, Ki, and Kd are obtained by minimizing the objective function formulated using the steady-state performance indices like Integral absolute error (IAE) of tie-line power and frequency deviation of interconnected system. To test the robustness of the propounded controller, the system is studied with system uncertainties, such as change in load demand, synchronizing power coefficient and inertia constant. The two-area interconnected power system (TAIPS) is modeled and simulated using Matlab/Simulink. The results exhibit that the steady-state and transient performance indices such as IAE, settling time, and control effort are impressively enhanced by an amount of 87.65%, 15.39%, and 91.17% in area-1 and 86.46%, 41.35%, and 91.04% in area-2, respectively, by the proposed method compared to other techniques presented. The minimum control effort of PSO-GSA-tuned PID controller depicts the robust performance of the controller compared to other non-meta-heuristic and meta-heuristic methods presented. The proffered method is also validated using the hardware-in-the-loop (HIL) real-time digital simulation to study the effectiveness of the controller. © 2019 by the authors.

Author Keywords
Automatic load frequency control (ALFC); Particle swarm optimized-gravitational search algorithm (PSO-GSA); Proportional-integral-derivative (PID) controller; Two-area interconnected power system (TAIPS)

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4) Samraj, D.B., Perumal, M.P.

Analogy of the losses in surface and interior permanent magnet synchronous wind turbine generators
(2019) *International Journal of Scientific and Technology Research*, 8 (12), pp. 2507-2515. Cited 1 time.

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Abstract
This paper presents a Wind turbine (WT) system based on Permanent magnet synchronous generator (PMSG) using Surface mounted synchronous generator (SPMSG) and Interior magnet synchronous Generator (IPMSG). The analysis is compared between IPMSG and SPMSG. The same amount of copper and iron were used in both generators. In order to broaden the investigation two different appropriate motors have been used. This paper shows the analysis between both SPMSG and IPMSG technique. The copper and iron losses were utilized with machine and inverter loss in SPMSG and IPMSG technique. The SPMSG and IPMSG are compared based on density of power, electrical efficiencies, losses and torque. The angle of voltage, current and power were contributed in both IPMSG and SPMSG technique. In this technique the Back to back converter was utilized in the PMSG system it is utilized to change the power into dc-link. Simulation result

shows the comparison of SPMSG and IPMSG technique with WT system and experimental results are obtained based on the power input at the shaft of the generator. © IJSTR 2019.

Author Keywords
Back to Back converter; IPMSG; PMSG; SPMSG; Stator current; WT

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5) Gorantla, A.[a] , Deepa, P.[b]

Design of Approximate Subtractors and Dividers for Error Tolerant Image Processing Applications
(2019) *Journal of Electronic Testing: Theory and Applications (JETTA)*, 35 (6), pp. 901-907. Cited 13 times.

DOI: 10.1007/s10836-019-05837-5

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Abstract
Approximate computing is a promising technique for energy-efficient Very Large Scale Integration (VLSI) system design and best suited for error resilient applications, such as signal processing and multimedia. Approximate computing reduces accuracy, but still provides significant and faster results with low power consumption. It is attractive for arithmetic circuits. Four approximate subtractors are proposed based on the approximate computing at logic level using Karnaugh map (K-map) simplification. This paper deals with the design approach of various approximate subtractors and dividers for image processing to tolerate the minimal loss of quality. The proposed designs offer better error tolerant capabilities for image processing. © 2019, Springer Science+Business Media, LLC, part of Springer Nature.

Author Keywords
Approximate Computing;. Low Power; Approximate Subtractor; Image Processing

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6) Saravanan Arumugamurthy, S.[a] , Sivanandi, P.[b] , Pandian, S.[c] , Choksi, H.[d] , Subramanian, D.[e]

Conversion of a low value industrial waste into biodiesel using a catalyst derived from brewery waste: An activation and deactivation kinetic study
(2019) *Waste Management*, 100, pp. 318-326. Cited 46 times.

DOI: 10.1016/j.wasman.2019.09.030

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Abstract
In this study, biodiesel was produced by using a heterogeneous acid catalyst made from brewer's spent yeast (BSY). BSY was initially activated by phosphoric acid followed by carbonization in inert atmosphere and sulfonation process to prepare the catalyst. It is completely characterized using sophisticated instruments to determine its physical and chemical properties. Subsequently, the effectiveness of the catalyst was analyzed by subjecting it to sonochemical esterification of an industrial low value waste product, palm fatty acid distillate (PFAD). The reactions were performed in the presence of ultrasound at a constant frequency of 25 kHz. An optimum methyl ester conversion of 87.8% was achieved at 8 wt% of catalyst, 21:1

methanol to PFAD molar ratio, 65 °C and 180 min of reaction time. The catalyst displayed a high catalytic stability up to four cycles due to firm [sbnd]SO3H functional group attached onto the surface. Furthermore, a novel sonochemical kinetic model was proposed for surface esterification reaction on the catalyst. The reaction rate was found and it followed a pseudo-first-order reaction mechanism. Furthermore, a deactivation model was also proposed to account for the loss of activity upon catalyst reuse during sonochemical reaction. © 2019 Elsevier Ltd

Author Keywords
Activation kinetics; Biodiesel; Deactivation kinetics; Esterification; Heterogeneous catalyst

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7) Revathi, B.[a] , Balakrishnan, L.[b] , Chandar, N.K.[a]

Structural, morphological, optical, dielectric and magnetic field sensing characteristics of Bi1-xKxMnO3 and BiMn1-yCoyO3 nanopowders: A comparative study
(2019) *Materials Letters*, 256, art. no. 126655, . Cited 4 times.

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Abstract
Composites of BiMnO3 such as Bi1-xKxMnO3 and BiMn1-yCoyO3 (x = y = 0.05, 1.0, 1.5) based fiber optic magnetic field sensors were fabricated and sensitivity analysis was performed at room temperature. The properties of nanosized particles synthesized using hydrothermal method were studied using X-ray diffraction, scanning electron microscope, ultraviolet–visible spectrometer and Dielectric measurement. The results reveal the formation of nanocrystallite of size ~ 50 nm with rice like morphology in the bandgap range between 1.2 eV and 1.5 eV. The 5% K doped BMO has better magnetic field sensitivity at a source wavelength of 693 nm and pristine BMO has better sensitivity at 772 nm. © 2019 Elsevier B.V.

Author Keywords
Co doped BiMnO3; Dielectrics; Fiber optic sensor; K doped BiMnO3; Magnetic field sensor; Nanocrystalline materials

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8) Veerasamy, V.[a] , Abdul Wahab, N.I.[a] , Ramachandran, R.[c] , Thirumeni, M.[b] , Subramanian, C.[c] , Othman, M.L.[a] , Hizam, H.[a]

High-impedance fault detection in medium-voltage distribution network using computational intelligence-based classifiers
(2019) *Neural Computing and Applications*, 31 (12), pp. 9127-9143. Cited 39 times.

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Abstract
This paper presents the high-impedance fault (HIF) detection and identification in medium-voltage distribution network of 13.8 kV using discrete wavelet transform (DWT) and intelligence classifiers such as adaptive neuro-fuzzy inference system

(ANFIS) and support vector machine (SVM). The three-phase feeder network is modelled in MATLAB/Simulink to obtain the fault current signal of the feeder. The acquired fault current signal for various types of faults such as three-phase fault, line to line, line to ground, double line to ground and HIF is sampled using 1st, 2nd, 3rd, 4th and 5th level of detailed coefficients and approximated by DWT analysis to extract the feature, namely standard deviation (SD) values, considering the time-varying fault impedance. The SD values drawn by DWT technique have been used to train the computational intelligence-based classifiers such as fuzzy, Bayes, multi-layer perceptron neural network, ANFIS and SVM. The performance indices such as mean absolute error, root mean square error, kappa statistic, success rate and discrimination rate are compared for various classifiers presented. The results showed that the proffered ANFIS and SVM classifiers are more effective and their performance is substantially superior than other classifiers. © 2019, Springer-Verlag London Ltd., part of Springer Nature.

Author Keywords
Adaptive neuro-fuzzy inference system; Bayes and fuzzy classifier; Discrete wavelet transform; High-impedance fault; Multi-layer perceptron neural network (MLP); Support vector machine

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2-s2.0-85071233733

9) Kesavan, S.P.[a] , Rajeswari, R.[b]

A new processing method for signal and image analysis using discrete wavelet transform
(2019) *Applied Mathematics and Information Sciences*, 13 (6), pp. 945-953.

DOI: 10.18576/amis/130607

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Abstract
In this paper, we develop a new method for the analysis of signal and image data using DiscreteWavelet Transform (DWT). The new method reduces the size of the computing devices and consumes less energy. Out of different transformation techniques, the most famous and dominant architecture is the discrete wavelet transform. The discrete wavelet transform design optimization has done on power and leakage current reduction. New adders are proposed which are based on power gating and reversible logic. It is shown that the proposed adders reduce the dynamic power by about 30%. The proposed design in 45 nm and 32 nm CMOS technology is efficient when compared to other methods. © 2019 NSP.

Author Keywords
Adder; CMOS; DWT architecture; Leakage reduction; Low power; MAC; Multiplier

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10) Vigneselvan, S.[a] , Manikandan, V.[b] , Petrila, I.[c] , Vanitha, A.[a] , Chandrasekaran, J.[d]

Effect of Tin Element on the Structural, Optical and Humidity Sensing Properties of Cerium Oxide Nanoparticles
(2019) *Journal of Electronic Materials*, 48 (11), pp. 7495-7506. Cited 7 times.

DOI: 10.1007/s11664-019-07563-2

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Abstract
In this work, pristine and tin substituted cerium oxide nanoparticles (NPs) namely Ce1−xSnxO2, x = 0.0, 0.2, 0.4, 0.6, were

prepared by a simple microwave synthesis method for humidity sensing studies. Different characterization methods such as scanning electron microscopy, transmission electron microscopy and energy-dispersive x-ray spectroscopy analysis demonstrated the formation of spherical NPs with an approximate crystalline size of 5–10 nm, desirable chemical composition and presence of oxygen defects. Also, optical measurements results demonstrated the increase of the band gap energy in tin substituted NPs due to formation of intermediate energy levels as a result of tin substitution. Furthermore, humidity sensing studies showed a high response of the fabricated sensors to humidity as a result of very small particle sizes along with the presence of tin in cerium oxide NPs. Finally, the fabricated humidity sensors showed a very good reproducibility of 95%. The results of this study confirm the possibility of realization of highly sensitive humidity sensors based on tin substituted cerium oxide NPs for application in real environments. © 2019, The Minerals, Metals & Materials Society.

Author Keywords
humidity sensor; optical properties; structural properties; Tin substituted cerium oxides

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11) Samraj, D.B., Perumal, M.P.

Compatibility of electrical generators for harvesting extended power from wind energy conversion system
(2019) *Measurement and Control (United Kingdom)*, 52 (9-10), pp. 1240-1251. Cited 3 times.

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Abstract
In this paper, a comparative study between the two generator types with wind energy conversion system is proposed. The two generator types are doubly fed induction generators and permanent magnet synchronous generators. As in the wind turbine context, doubly fed induction generators and permanent magnet synchronous generators seem to be attractive solutions to be used to harness the wind energy. Wind turbine generators compatibility is anticipated in view of the stochastic nature of wind profile in the particular location in correlation with the Electro-Magnetic Torque profile of the wind generator which is acquired by simulating wind energy conversion system for the available wind speeds with high efficient generators. To validate the advantage of the proposed system, the torque profile of doubly fed induction generators and permanent magnet synchronous generators with an hourly average wind speed for 24-h time period is analysed. The real and reactive power of permanent magnet synchronous generators at wind speed of 13 m/s and permanent magnet synchronous generators increased pole pairs at wind speed of 13 m/s are also analysed. Furthermore, the power delivered by doubly fed induction generators and permanent magnet synchronous generators is analysed and compared. The comparison results demonstrate that the superiority of the permanent magnet synchronous generators over doubly fed induction generators and confirm its potential to extract the maximum energy from the wind. © The Author(s) 2019.

Author Keywords
DFIG; PMSG; Wind profile

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12) Priya, M.[a] , Jeyanthi, J.[b]

Removal of COD, oil and grease from automobile wash water effluent using electrocoagulation technique.
(2019) *Microchemical Journal*, 150, art. no. 104070, . Cited 75 times.

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Abstract
This present study investigates the removal of COD, oil and grease from the automobile wash water effluent using electrocoagulation technique (ECT). The performance of ECT was examined by varying the position of the sacrificial electrode materials (Al, Fe, St, and Cu) for the removal of COD from the automobile wastewater. For an efficient and economic treatment the influence of distance among the electrodes (10 cm, 5 cm, and 2.5 cm), current density (5 A/m2 to 30 A/m2),the reaction time (10 to 60 min), and pH of the wastewater (4 to 10) was monitored. The possible mechanisms associated with electrocoagulation and the performances of influencing operational variables of electrocoagulation were discussed. The effect of aeration also observed (with and without). The maximum COD reduction attained with a Cu (anode)—Al (cathode) electrode at the original pH of wastewater 6.5. The higher percentage of 95.1%, 92.5% and 99% of COD, oil & grease and turbidity removal was attained with an optimized distance among the electrodes of 5 cm, current density of 25 A/m2, the reaction time of 40 min and pH of 6. The cost of the ECT estimated as INR 386.01/m3 for the treatment of automobile wash water effluent with optimized operating variables and the natural pH of the wastewater. For a cost-effective treatment, the ECT was improved with the addition of chitosan modified fly ash cenosphere and its performance for the removal of COD was observed. Thus, the ECT with Cu—Al electrode configuration was proposed for the removal of COD and oil and grease from the automobile wastewater in an efficient and economic aspect. © 2019 Elsevier B.V.

Author Keywords
COD removal; Cost analysis; Electrocoagulation; Electrode arrangement; Oil & grease removal

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13) Karthik, V.[a] , Saravanan, K.[b] , Patra, C.[c] , Ushadevi, B.[d] , Vairam, S.[d] , Selvaraju, N.[c]

Biosorption of Acid Yellow 12 from simulated wastewater by non-viable T. harzianum: kinetics, isotherm and thermodynamic studies
(2019) *International Journal of Environmental Science and Technology*, 16 (11), pp. 6895-6906. Cited 34 times.

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Abstract
The current study deals with the biosorption of Acid Yellow 12 (AY 12) dye using dead fungal biomass Trichoderma harzianum. The dead fungal biomass was characterized using FTIR, XRD, TG–DTA and SEM–EDAX. Effect of various parameters on the efficiency of biosorption like pH, biosorbent dosage and temperature has also been analysed. The adsorption capacity was found to be higher at pH 4, with an initial dye concentration of 100 mg/L and biosorbent dosage of 0.4 g/L. The adsorption kinetics, isotherms and thermodynamic studies of dye adsorption onto the biomass were also investigated. The biosorption between the dye and biomass followed Freundlich adsorption isotherm. The biosorption followed pseudo-second-order kinetics. Negative value of ΔG° shows the spontaneous nature of biosorption process, and positive ΔH° reveals adsorption as an endothermic process. Since T. harzianum is a low-cost industrial by-product, it can be used as an effective novel biosorbent for the removal of textile dyes. It also acts as one of the cheap sources of biosorbent for the removal of dye Acid Yellow 12. © 2018, Islamic Azad University (IAU).

Author Keywords
Acid Yellow 12 dye; Adsorption isotherm; Adsorption kinetics; Biosorption; T. harzianum

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14) Satheesh Kumar, J.[a] , Saravana Kumar, G.[b] , Ahilan, A.[c]

High performance decoding aware FPGA bit-stream compression using RG codes
(2019) *Cluster Computing*, 22, pp. 15007-15013. Cited 5 times.

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Abstract
FPGA design for complex applications need high capacity of configuration memory. To fullfil the large memory requirement, higher end FPGAs are required and it leads to higher cost. In order to reduce the cost constraint, bit-stream compression is prominently involved to reduce the bit-stream size and the memory requirement of FPGA configuration. In this paper new code compression techniques are proposed with minimum cost. The proposed code compression techniques RG-1 and RG-2 codes are designed based on the combination of run length and Golomb coding. The proposed RG codes overcome the limitation of both run length and Golomb coding techniques. The main contribution of this work is to analyze the proposed work in terms of number of 1's, number of transitions and size of compressed bits. The comparison result shows that the RG code is more robust when compared to other traditional code compression techniques. The results shows that CR improvement of 9 and 5% compare with RLE for the RG-1 and RG-2 respectively and CR improvement of 7 and 2% compare with golomb for the RG-1 and RG-2 respectively. © 2018, Springer Science+Business Media, LLC, part of Springer Nature.

Author Keywords
CR (compression ratio); FPGA (field programmable gate array); Golomb code; Run length code

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

ZnO nanorods based fiber optic hexane sensor
(2019) *AIP Conference Proceedings*, 2162, art. no. 020105, . Cited 2 times.

DOI: 10.1063/1.5130315

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Abstract
Fabrication and characterization of fiber optic hexane sensor using pristine ZnO nanorods have been reported. ZnO nanorods were synthesized by hydrothermal method. The structural, morphological and elemental properties of the nanorods were analyzed using X-ray diffraction (XRD), scanning electron microscope (SEM), energy dispersive spectrometer (EDS). The XRD results indicate that the nanorods were crystallized in hexagonal wurzite structure. The SEM analysis shows the rod like shape of the synthesized nanopowders. The fiber optic sensor probe was fabricated via clad modification technology. Further, the probe was subjected to different VOC gases at room temperature. Test VOC gas vapors such as ethanol, methanol and hexane were chosen to investigate the response behaviour of the ZnO nanorods. Noticeably, the sensor showed higher selectivity towards hexane along with the sensitivity of ~6.5%. The plausible gas sensing mechanism is also discussed in detail. The splendid sensing properties advocate that the ZnO nanorods are promising candidate for hexane sensor. © 2019 Author(s).

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16) Vivekanandan, D.[a] , Sakthivel, M.[a] , Moorthy, S.[b] , Ajith Arul Daniel, S.[c]

Fabrication and characterization of TiO2 particulate filled agave Americana fiber-reinforced polyester resin composites
(2019) *Pigment and Resin Technology*, 48 (6), pp. 533-539. Cited 5 times.

DOI: 10.1108/PRT-08-2018-0079

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Abstract
Purpose: In this study, TiO2 is used to enhance the mechanical properties of the composite material containing agave Americana fiber and polyester resin. Design/methodology/approach: Agave Americana fiber was first treated with 5% of NaOH, and the composition of treated and untreated fiber was kept constant, whereas the particulate and resin were alternatively used. The handlay method is used to fabricate the composite plates. The morphology of the composites was studied using scanning electron microscopy (SEM). Findings: The composite was composed of 30% treated agave Americana, 10% of TiO2 particulates and 60% of a polyester resin for better and enhanced mechanical properties. Practical implications: The composite can be used for aero-structural components, automobile components and other areas where light-weight components are required. Originality/value: A new type of agave Americana fiber with TiO2 and polyester resin composite was fabricated and investigated. © 2019, Emerald Publishing Limited.

Author Keywords
Agave Americana; Mechanical properties; Natural fibre composite; Polyester resin; TiO2

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17) Baranitharan, P.[a] , Ramesh, K.[a] , Sakthivel, R.[b]

Multi-attribute decision-making approach for Aegle marmelos pyrolysis process using TOPSIS and Grey Relational Analysis: Assessment of engine emissions through novel Infrared thermography
(2019) *Journal of Cleaner Production*, 234, pp. 315-328. Cited 53 times.

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Abstract
This research focuses on the selection of the optimum process parameters for Aegel marmelos (AM) pyrolysis experiment based on multi-objective decision-making techniques. This investigation presents the optimization report for obtaining maximum pyrolysis oil from AM de-oiled seed cake through thermochemical conversion (pyrolysis) process. The pyrolysis process has been conducted according to L27 orthogonal array with chosen input control factors such as pyrolysis temperature (°C), heating rate (°C/min) and biomass particle size (mm). The output response parameters measured are the bio-oil yield, bio-char yield and biogas yield. The multi-objective decision-making approach namely Technique for order preference by similarity to ideal solution (TOPSIS) and Grey relational analysis (GRA) techniques are employed to determine the optimum pyrolysis process parameters to maximize the yield of AM bio-oil. The optimized values of pyrolysis temperature (PT), heating rate (HR) and feedstock particle size (PS) are 600 °C, 10 °C/min and 0.6 mm. At peak engine loading condition, 20% AM bio-oil + 80% diesel fuel blend (AM20) emit lower carbon dioxide (CO2 = 8.68%) and oxides of nitrogen (NOx = 1401 ppm) emissions as compared with diesel (D) CO2 (10.33%) and NOx (1511 ppm) emissions. The association between exhaust gas temperature and NOx emission was inferred using a novel approach of thermal imager by sensing the infrared rays from the hot surface of the exhaust port. Infrared thermal images are captured during the engine operations fuelled with bio-oil at the optimum pyrolysis conditions concluded by TOPSIS and GRA results (PT = 600 °C, HR = 10 °C/min and PS = 0.6 mm). According to the thermal imaging result, AM20 blend produces the lower amount of NOx emissions compared with neat diesel and it is suggested that AM bio-oil can be used as engine fuel instead in order to preserve the eco-system stability and biodiversity. © 2019 Elsevier Ltd

Author Keywords

Aegle marmelos; GRA; NOx emission; Pyrolysis; Thermal imager; TOPSIS

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18) Anitha, D.[a] , Ramadevi, A.[b]

Bicarbonate treated mangosteen shell carbon in removal of ni (Ii) from aqueous solution-isotherm and kinetic studies
(2019) *Digest Journal of Nanomaterials and Biostructures*, 14 (4), pp. 1049-1060.

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Abstract
The adsorption of heavy metal Ni (II) from aqueous solution using bicarbonate treated mangosteen shell was studied. The effects of adsorbent dose, contact time, pH, on the removal efficiency of Ni (II) were evaluated by batch mode studies. Adsorption isotherm was studied using Langmuir, Freundlich and Temkin isotherm models. The pseudo-second order kinetic model fits well for the experimental data. The surface morphology and functional groups were analyzed using SEM, EDX, XRD and FT-IR data. All the parameters were compared with CAC. The recovery of the Ni (II) from BTMC is found to be good using 0.1 M HCl.

Author Keywords
Adsorption; Desorption; Kinetics; Mangosteen shell; Nickel

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19) Sharmila, G.[a] , Muthukumaran, C.[a] , Sangeetha, E.[a] , Saraswathi, H.[a] , Soundarya, S.[a] , Kumar, N.M.[b]

Green fabrication, characterization of Pisonia alba leaf extract derived MgO nanoparticles and its biological applications
(2019) *Nano-Structures and Nano-Objects*, 20, art. no. 100380, . Cited 52 times.

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Abstract
A facile, eco-friendly green synthesis of magnesium oxide nanoparticles (MONPs) using Pisonia alba leaf extract was reported. The MONPs were characterized by UV–Vis, TEM, EDX, XRD and FTIR. A good antioxidant activity was exhibited by P. alba leaf extract derived MONPs assessed by DPPH and FRAP assays. Antifungal activity assay results revealed that Aspergillus flavus and Fusarium solani were highly inhibited by green synthesized MONPs. The results of this study demonstrated that P. alba leaf extract derived MONPs showed good antioxidant, antifungal properties and it can be utilized for biomedical and food applications.

Author Keywords
Antifungal; Antioxidant; Magnesium oxide; Nanoparticles; Pisonia alba

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20) Baranitharan, P.[a] , Ramesh, K.[a] , Sakthivel, R.[b]

Measurement of performance and emission distinctiveness of Aegle marmelos seed cake pyrolysis oil/diesel/TBHQ opus powered in a DI diesel engine using ANN and RSM
(2019) *Measurement: Journal of the International Measurement Confederation*, 144, pp. 366-380. Cited 60 times.

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Abstract
The present investigation focuses on Artificial neural network (ANN) and Response surface methodology (RSM) modelling of a CI (Compression ignition) engine powered by Aegle marmelos (AM) pyrolysis oil/diesel/Tert-butyl hydroxyl quinone antioxidant (TBHQ) blend as a test fuel to predict and optimize the engine behaviour. Bio-oil is derived from AM de-oiled seed cake in a fixed bed pyrolysis reactor at 600 °C under the heating rate of 30 °C/min. To obtain data for testing and training the suggested RSM and ANN models, a direct injection, single cylinder CI engine was fuelled with proposed test fuel 80% diesel + 20% AM bio-oil + 1000 ppm TBHQ (A20D80T). The A20D80T has been assessed for the combined effects of varying compression ratio (CR = 16:1–17.5:1) and engine load (W = 25%–100%) in variable compression ratio (VCR) diesel engine through experimental investigation and ANN prediction and RSM optimization techniques. Using the experimental data for training, an ANN replica was developed according to feed forward back propagation algorithm (FFBP). Multi-layer perception (MLP) network was used for non-linear mapping between the experimental and predicted values. Engine process parameters were accurately predicted by trained ANN. The optimal values of engine performance (brake specific fuel consumption (BSFC) = 0.33 kg/kWh and brake thermal efficiency (BTE) = 22.01%) and emission behaviour (carbon monoxide (CO) = 0.67%, hydro carbon (HC) = 244 ppm, carbon dioxide (CO2) = 8.33% and oxides of nitrogen (NOx) = 351 ppm) were obtained by RSM optimization. The compression ratio of 17.5:1 at peak load condition was found to be superior engine characteristics through experimental assessment and ANN, RSM models. In the predicted ANN model the mean absolute average error (MAAE) was 0.552% and optimized RSM model MAAE was 1.231%. The ANN and RSM models gave the average correlation coefficient (R) of 0.998 and average coefficient of a determination (R2) of 0.991 respectively. The experimental, ANN and RSM analysis results depict that A20D80T blend delivered the enhanced performance and better emission behaviours compared with neat diesel fuel (D). © 2019 Elsevier Ltd

Author Keywords
Aegle marmelos; ANN; Bio-oil; CI engine test; RSM; TBHQ

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21) Kowshalya, A.M.[a] , Madhumathi, R.[b] , Gopika, N.[a]

Correlation Based Feature Selection Algorithms for Varying Datasets of Different Dimensionality
(2019) *Wireless Personal Communications*, 108 (3), pp. 1977-1993. Cited 25 times.

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Abstract
Curse of dimensionality problem needs to be addressed carefully when designing a classifier. Given a huge dimensional dataset, one interesting problem is the choice of optimal selection of features for classification. Feature selection is an interesting and most optimal solution to the curse of dimensionality problem. Numerous feature selection algorithms have been proposed in the recent past to solve the curse of dimensionality problem but no one stop solution prevails. This paper proposes two novel algorithms for feature selection namely Reverse Piece-wise Correlation Based Feature Selection (RPwCBFS) and Shuffled Piece-wise Correlation Based Feature Selection (SPwCBFS) that divides the feature space into pieces and computes the similarity of feature subsets in reverse order and in random shuffled manner respectively. The proposed algorithms are compared with Fast Correlation Based Feature selection (FCBF), Fast Correlation Based Feature selection # (FCBF#) and Fast Correlation Based Feature selection In Piece (FCBFiP). Standard medium and huge

dimensional datasets are used for experimentation purpose. Experimental results prove that the Reverse Piece-wise Correlation Based Feature Selection algorithm (RPwCBFS) and Shuffled Piece-wise Correlation Based Feature Selection algorithm (SPwCBFS) are prominent solution for feature selection when the underlying dataset is medium sized. For huge dimensional datasets, Shuffled Piece-wise Correlation Based Feature Selection algorithm (SPwCBFS) proves to be an optimal choice. © 2019, Springer Science+Business Media, LLC, part of Springer Nature.

Author Keywords
Correlation; Curse of dimensionality; Feature selection; Symmetric uncertainty

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22) Mahakavi, P., Chithra, R.

Impact resistance, microstructures and digital image processing on self-compacting concrete with hooked end and crimped steel fiber
(2019) *Construction and Building Materials*, 220, pp. 651-666. Cited 48 times.

DOI: 10.1016/j.conbuildmat.2019.06.001

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Abstract
This research paper presents the results of extensive experimental investigations and analytical results on the fresh and hardened properties of self-compacting concrete reinforced with hybrid hooked end fiber (HF) and crimped steel fiber (CF) in different fiber volume fractions. In this present investigation, the mixes were reinforced with different fiber combinations of hooked end fiber (0.25, 0.5 and 0.75%) and crimped fiber (0.25 and 0.5%). The fresh state properties of the mixes were characterized by using slump flow diameter, T50cm, and V-funnel test. The hardened properties of self-compacting concrete (SCC) mixes were assessed by using compressive strength, flexural strength and impact resistance test. Regression analysis was carried out in order to correlate the fresh and hardened state on the extensively large volume of collected experimental data. The results reported that adding hybrid hooked end-crimped steel fiber significantly improves the compressive strength, flexural strength and impact resistance. Addition of hooked end steel fiber led to improve the compressive strength when compared to crimped end fiber. Moreover, increasing the crimped fiber content decreased the effect of hooked end steel fiber in flexural strength improvement. © 2019 Elsevier Ltd

Author Keywords
Compressive strength; Crimped fiber; Fresh properties; Hooked end fiber; Impact resistance; Microscopic analysis; Self compacting concrete; Toughness

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23) Ebenezer, A.S.[a] , Rajsingh, E.B.[a] , Kaliaperumal, B.[b]

A novel proactive Health Aware Fault Tolerant (HAFT) scheduler for computational grid based on resource failure data analytics
(2019) *International Journal of Computers and Applications*, 41 (5), pp. 367-377. Cited 3 times.

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Abstract
In a heterogeneous distributed computing environment, developing a fault tolerance mechanism is a key research issue.

Most of the existing fault tolerance approaches for distributed computing environment are post-active. These post-active approaches, predominantly involve the heartbeat strategy for fault detection and the checkpointing mechanism for fault recovery. In this proposed work, a proactive Health Aware Fault Tolerant (HAFT) scheduler using the Cox Proportional Hazard survival probability model is developed. The survival probability of the resource is estimated using resource failure data analytics and termed as health coefficient of the resource. For the job distribution classes jclass1, jclass2, and jclass3, the average improvement for makespan in HAFT algorithm over the compared algorithms are 44, 59.6, and 26.4%. In a heterogeneous environment, the job failure rate of the HAFT scheduler is ranging between 15 and 20% and it is stable for all the three jclasses. In a homogenous environment, the job failure rate of HAFT algorithm in comparison to IRP, REP and MJSP algorithm is considerably reduced by 58.6, 26.4, and 11.6%, respectively. For a failure probability higher than 0.4, the resource efficiency of HAFT algorithm on an average is 26% more than MJSP and 53% more than REP. © 2018, © 2018 Informa UK Limited, trading as Taylor & Francis Group.

Author Keywords
computational grid; Failure data analytics; failure prediction; failure probability; job failure rate; makespan; proactive fault tolerant scheduler

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24) Anitha, J.[a] , Selvakumar, R.[b] , Murugan, K.[a]

Chitosan capped ZnO nanoparticles with cell specific apoptosis induction through P53 activation and G2/M arrest in breast cancer cells – In vitro approaches
(2019) *International Journal of Biological Macromolecules*, 136, pp. 686-696. Cited 23 times.

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Abstract
Now a days the well-organized strategy to induce apoptosis in cancer chemotherapy is to produce anti-cancer agent without any side effects is in needy. Hence the present investigation was aimed to explore the anticancer potentials of Amorphophallus paeoniifolius reduced zinc nanoparticles capped with chitosan against MCF 7 cell line (breast cancer cells)and studied for its optical and surface charge properties. The size, shape, dispersion and uniform distribution of biosynthesized zincoxide nanoparticle was examined using Field emission scanning electron microscope (FESEM) and Transmission electron microscope (TEM) respectively. The spherical and cubic nanocrystals were found to be lethal against MCF 7 cells on MTT assay at dose dependant manner (20–80 µg/ml) whose IC50 value 42 µg/ml. Bright field light microscopic study showed the apoptotic morphology of treated and control MCF-7 cells. Fluorescence staining A/O:EB and DAPI methods further cleared the chromosome condensation, nuclear fragmentation and confirms the apoptosis induced by Ch-Ap-ZnONPS within IC50 concentrations. Significant cell cycle arrest at particular stage of G2/M was achieved with the nanocomplex treatment at dose dependant manner. Finally, it was observed that the apoptotic gens and protein expressions of MCF-7 cell line were up and down regulation with the treatment of Ch-Ap-ZnONPS when compared to normal cells. © 2019 Elsevier B.V.

Author Keywords
FESEM; TEM; Western blot

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

Corrigendum to “Effects of doping concentration on structural, morphological, optical and electrical properties of

tungsten doped V2O5 nanorods" [Ceram. Int. 44 (2018) 7098–7109](S0272884218301640) (10.1016/j.ceramint.2018.01.149)
(2019) *Ceramics International*, 45 (13), p. 16723.

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Abstract
The authors regret that in the original published version of this article the author N. Senthil Kumar was missing from the author list. The author is added here. The authors would like to apologise for any inconvenience caused. Mr. I. Pradeep and Mr. N. Senthil Kumar worked jointly in the same system up to basic preparation work. Then, they extended their work for different applications. Mr. N. Senthil Kumar is now included as a co-author for his contribution to this paper. © 2018 Elsevier Ltd and Techna Group S.r.l.

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26) Mythily, M.[a] , Valarmathi, M.L.[b] , Durai, C.A.D.[c]

Model transformation using logical prediction from sequence diagram: an experimental approach
(2019) *Cluster Computing*, 22, pp. 12351-12362. Cited 7 times.

DOI: 10.1007/s10586-017-1618-5

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Abstract
Recent trends on software development life cycle (SDLC) deal much on automatic processes that leads to time and cost reduction. In the era of model driven architecture (MDA), unified modeling language (UML) models are the backbone of any developing software. A minimum of 5 models out of 14 models need to be designed to completely visualize any software. The proposed logical prediction model transformation automates the transformation of two models from the sequence diagram. Each model carries same information of the other models in different aspects to visualize the requirement constraints in different dimensions. In order to take the advantage of this, sequence diagram has been considered as a pioneer from MDA approach to generate other models automatically. Information such as elements, attributes, relationships, etc., of the sequence diagram are extracted using XML object model parser. The extracted information from sequence diagram combined with the pre-defined logical prediction rules, generates the elements and relationships of other models. The outcome of transformed information is rendered by PlantUML structure to produce the desired model. The experiment undertaken has been focused to generate class diagram and activity diagram based on the pre-defined logical prediction rules. It also confirms the transformation process proposed, generates suitable and appropriate class and activity diagrams. This transformation process has a scalability to generate any model from the other model based on proper logical prediction rules. This automation proposal eases the task of designer in design engineering phase of the SDLC. © 2018, Springer Science+Business Media, LLC, part of Springer Nature.

Author Keywords
Logical prediction; Model transformation; UML models; XMI

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27) Satheeshkumar, M.K.[a] , Ranjith Kumar, E.[b] , Srinivas, C.[c] , Prasad, G.[c] , Meena, S.S.[d] , Pradeep, I.[e] , Suriyanarayanan, N.[f] , Sastry, D.L.[g]

Structural and magnetic properties of CuFe 2 O 4 ferrite nanoparticles synthesized by cow urine assisted combustion method
(2019) *Journal of Magnetism and Magnetic Materials*, 484, pp. 120-125. Cited 78 times.

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Abstract
Copper ferrite (CuFe 2 O 4) nanoparticles were synthesized by sol–gel auto combustion method using cow-urine as a chelating agent. The obtained ferrite nanoparticles are heat treated at different temperatures (450 °C and 750 °C) in order to study their size dependent structural and magnetic properties. Energy Dispersive X-ray (EDX) spectra showed the maintenance of stoichiometry of elemental composition of ferrite system. Secondary phases of CuO and α-Fe 2 O 3 are identified from the X-ray diffraction (XRD) patterns and these phases seem to be reducing with the heat treatment improving the ferrite phase of the sample. A systematic variation of structural parameters that is decrease of lattice parameter (8.379–8.369 Å) and increase in average crystallite size (13.7–18.2 nm) have been found with the heat treatment. The average particle size estimated from Field Emission Scanning Electron Microscopy (FE-SEM) micrographs (14.5–22.3 nm) is slightly bigger than the average crystallite size estimated from XRD is due to the coalescence of crystallites which can be identified in FE-SEM micrographs. The obtained vibrational frequencies in the range of 550–450 cm −1 confirm the ferrite phase of copper ferrite. The splitting observed at the octahedral vibrational band is assigned to the secondary phase of α-Fe 2 O 3 . The saturation magnetization (Ms) is increasing with the heat treatment and highest value of Ms = 35.4 emu/g was reported. The results are discussed in terms of variation of particle sizes presuming the core–shell interactions. © 2019 Elsevier B.V.

Author Keywords
Magnetic properties; Nanoparticles; Secondary phases; XRD

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28) Priya, N.S.[a] , Azhagan, S.A.[b]

Importance of cesium carbonate additives in the nucleation and growth of α- and γ-glycine single crystals
(2019) *Molecular Crystals and Liquid Crystals*, 689 (1), pp. 48-59.

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Abstract
In the present work, successful growth of α- and γ-glycine single crystals using cesium carbonate (Cs2CO3) as an additive has been reported. The powder XRD study confirms that the grown 0.2 M cesium carbonate added glycine crystal has α-glycine crystal morphology and it crystallized in a monoclinic crystal structure with a space group of P21/n. In a similar manner, the PXRD patterns recorded for 0.4, 0.6, 0.8 and 1 M concentrations of cesium carbonate added glycine crystals and the obtained PXRD patterns authenticated that the harvested grown crystals belong to hexagonal crystal system with space group P31. The variation of dielectric constant and dielectric loss for the γ-glycine single crystal was carried out as a

function of frequency and the results were discussed in detail. The transmittance spectrum shows that the grown α- and γ-glycine crystals had an extensive optical transparency window in the entire spectrum especially in visible region. The band gap varies from 4.59 to 6.01eV. The positive photoconducting nature of the grown γ-glycine single crystal in the presence of cesium carbonate was studied by the photoconductivity study. The second harmonic generation (SHG) for the prepared γ-glycine single crystals was studied by using Kurtz and Perry powder technique with Nd-YAG laser. The result shows that the prepared γ-glycine single crystals exhibit enhanced second harmonic conversion efficiency and it proves that these crystals are an alternate to KDP crystal in optoelectronic devices and NLO applications. © 2019, © 2019 Taylor & Francis Group, LLC.

Author Keywords
Cesium carbonate; dielectric materials; glycine; nonlinear optical materials

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29) Sangeetha, D., Deepa, P.

FPGA implementation of cost-effective robust Canny edge detection algorithm
(2019) *Journal of Real-Time Image Processing*, 16 (4), pp. 957-970. Cited 55 times.

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Abstract
Implementation of Canny edge detection algorithm significantly outperforms the existing edge detection techniques in many computer vision algorithms. However, Canny edge detection algorithm is complex, time-consuming process with high hardware cost. To overcome these issues, a novel Canny edge detection algorithm is proposed in block level to detect edges without any loss. It uses sobel operator, approximation methods to compute gradient magnitude and orientation for replacing complex operations with reduced hardware cost, existing non-maximum suppression, block classification for adaptive thresholding and existing hysteresis thresholding. Pipelining is introduced to reduce latency. The proposed algorithm is implemented on Xilinx Virtex-5 FPGA and it provides better performance compared to frame-level Canny edge detection algorithm. The synthesized architecture reduces execution time by 6.8 % and utilizes less resource to detect edges of 512 × 512 image compared to existing distributed Canny edge detection algorithm. © 2016, Springer-Verlag Berlin Heidelberg.

Author Keywords
Canny edge detection algorithm; FPGA; Hardware-cost; Image processing; VLSI architecture

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30) Saravanakumar, K.[a] , Rajeswari, R.[b]

Microbial fuel cell–based self-powered biosensor for environment monitoring in IoT cloud framework
(2019) *Concurrency and Computation: Practice and Experience*, 31 (15), art. no. e5165, . Cited 14 times.

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Abstract
Renewable energy sources are useful for sustainable monitoring, but still very limited today due to various implementation

constraints. Microbial fuel cells (MFCs) are considered a promising renewable power source for remote monitoring applications. They are used as wireless temperature sensors and biosensors due to their ability in powering environmental sensors. MFCs can provide ultralow and dynamic power, and hence, energy improvement is crucial for self-powered biosensors. Cloud computing–based IoT framework is proposed for environment monitoring using MFC-based biosensors. This paper presents the electric energy harvesting from Oryza Sativa plants with bacteria as the catalyst. It adopts the technology of MFC in the plants to extract the maximum energy. An effective power management with IoT cloud framework is presented in this work to independently operate multiple MFCs to generate maximum power. Independently operated MFCs with electrically isolated electrodes have been utilized in the design of a suitable power management system. Cloud computing is utilized in this work to process the data generated in continuous monitoring of environment. Experimental results show that the proposed framework can achieve sustainable power for sensor nodes and achieves maximum performance in environment monitoring using cloud-based IoT platform. © 2019 John Wiley & Sons, Ltd.

Author Keywords
cloud computing; environment monitoring; Internet of Things; microbial fuel cell; power management system; remote monitoring

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31) Saravanakumar, R.[a] , Muthukumaran, K.[a] , Selvaraju, N.[b]

Enhanced Pb (II) ions removal by using magnetic NiO/Biochar composite
(2019) *Materials Research Express*, 6 (10), art. no. 105504, . Cited 23 times.

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Abstract
The core objective of this work is to establish the performance and characterization of carbon nanocomposite which is derived from agricultural invasive waste and its application on the removal of Pb(II) ions. Biochar was prepared from Prosopis juliflora wood by commercial thermal activation process and mesoporous NiO/Biochar (PJONC) composite synthesized by novel precipitation approach. The activated carbon and PJONC composite were characterised by x-ray diffraction (XRD), pHpzc, BET surface area (BET), scanning electron microscopy (SEM), FTIR and VSM studies. The efficiency sorption parameters such as; pH study, equilibration time, the dosage of adsorbents, feed concentration and kinetic behaviours were studied. At the optimized conditions, the four different isotherms such as Langmuir, Freundlich, Temkin and Dubinin-Radushkevich studies were carried out for each of the adsorbents. It revealed that multi-layer Freundlich isotherm is more reasonable and the Pb(II) ions removal capacity (qe) (mg g-1) was 28 mg g-1 for activated carbon, 43.0 mg g-1 for nanocomposite. Thermodynamic parameter values (ΔS, ΔH, ΔG) were calculated and it was indicated that this adsorption process depended on the temperature and it was spontaneous and exothermic nature. The PJONC is a soft magnetic material, so it can be used in the environmental remediation field and also this adsorbent can be efficiently separated from treated water by using magnetic field. © 2019 IOP Publishing Ltd.

Author Keywords
adsorption; nanocomposite; NiO/Biochar; Pb (II) ions; precipitation method; prosopis juliflora

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32) Bhaggiaraj, S.[a] , Sumathy, V.[b]

An Effective Pseudonym-based Privacy Preservation Mechanism for Securing Services in Cloud Computing Environment
(2019) *Applied Mathematics and Information Sciences*, 13, pp. 221-229.

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Abstract
The cloud computing environment facilitates diversified number of potential services to its users such as the utilization-based pricing that is, every cloud provider has its own pricing scheme, on-demand service utilization and risk transference during the process of resource sharing. However, the security to cloud services during the event of data sharing is considered as the crucial task. In this paper, an Effective Pseudonym-based Privacy Preservation Mechanism (EP-PPM) is proposed for facilitating significant data sharing using the method of erasable data hiding. This EP-PPM approach utilizes the benefits of the P-Gene for hiding the data in order to prevent the overhead occuring during the process of data exchange provisioned between the cloud servers and its users. This EP-PPM scheme ensures secureness to the cloud services by periodic updating of pseudonym based on bilinear maps, that is shared between the interacting entities of the cloud environment. The simulation experiments and investigations of the proposed EP-PPM scheme evaluated, using the pseudonym generation and verification cost occuring in the process of securing cloud services, confirm a predominant improvement over the benchmarked security approaches of the literature. The percentage of privacy-preservation is calculated based on number of cloud service. As compared to the proposed EP-PPM scheme with existing IPN-PPM, P2E-CDSS and RDIC-PPM methods, the proposed method achieves the best results. © 2019. NSP Natural Sciences Publishing Cor.

Author Keywords
Cloud computing; cloud services; privacy preservation mechanism

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33) Arjunasamy, A., Rathi, S.

Relationship Based Heuristic for Selecting Friends in Social Internet of Things
(2019) *Wireless Personal Communications*, 107 (4), pp. 1537-1547. Cited 11 times.

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Government College of Technology, Coimbatore, India

Abstract
Internet of Things is the future era of computing, where every conventional object are equipped with sensing and communicating capabilities to co-ordinate with each other autonomously to achieve a common goal. Social Internet of Things is the recent enhancement of Internet of Things where the communication between objects employs theories and observations from human social behavior with various types of relationships. The number of objects directly communicating with a device needs to be managed intelligently to cope with the memory and computational capacity of each object. Heuristic which are developed earlier uses graphical property of the device; this is the first work to the best of our knowledge to adopt the type of relationship in relationship management heuristic. An analysis is also presented after applying the heuristic in an Social Internet of Things environment. © 2019, Springer Science+Business Media, LLC, part of Springer Nature.

Author Keywords
Internet of Things; Relationship management heuristic; Social Internet of Things

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34) Chithra, R.[a] , Ramadevi, K.[b] , Chithra, S.[a] , Ravindranath Chandra, R.[c] , Mangaleshwaran, L.[d]

Production of medium strength self compacting concrete using silica fume and quarry dust

(2019) *International Journal of Engineering and Advanced Technology*, 8 (6 Special issue), pp. 65-72. Cited 1 time.

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Abstract
Self Compacting Concrete (SCC) is able to compact under its own mass in thin sections and in congested reinforced zones due to its high fluidity and cohesiveness. In order to produce an eco-friendly self compacting concrete with characteristic compressive strength of 40MPa, a fine industrial by-product silica fume is used as a partial substitutefor cement by weight (5%, 7.5% and 10%) and in addition to that quarry dust is partially replaced for natural fine aggregate from 5 to 15% with an increment of 5%. To study the effect of silica fume and quarry dust in fresh and hardened properties of medium strength self compacting concrete, 10 different SCC mixes were designed using Japanese method. From the experimental studyit was observed that the SCC mix containing 7.5% silica fume and 5% quarry dust exhibits the equivalent properties as that of SCC mix made with conventional materials and found to be optimum. Also, analytical expressions are proposed to predict the indirect tensile strength and flexural strength of SCC in terms of compressive strength and the results are compared with the existing codal provisions. © BEIESP.

Author Keywords
Eco-friendly; Fresh Properties; Mechanical properties; Quarry Dust; Self Compacting Concrete; Silica Fume

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35) Vidhya, K.[a] , Shanmugalakshmi, R.[b]

Improved diabetic data analytic model for complication prediction
(2019) *International Journal of Engineering and Advanced Technology*, 8 (6 Special issue), pp. 224-230. Cited 1 time.

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Abstract
Data Analytic model examines large datasets and reveals the hidden information like useful patterns and their correlations in it. Especially in the healthcare analytics accurate analysis and correct prediction would be much more important for prevention of further complications. The prediction here is based on the prior treatment details and readmission possibility based on the health condition from the Diabetes dataset. Upon aiming to analyze and predict the possibility of diabetes complication, the diabetic data is preprocessed and analyzed using Decision Tree Algorithm. As per execution the accuracy of the algorithm is only 55% only. We improved the accuracy value to 84% by the application improved AdaBoost based ID3 algorithm. This enhanced system shows the improved result for accuracy precision, recall and F-measure. © BEIESP.

Author Keywords
Accura; AdaBoost; BigData; Classifier; Decision tree; Diabetes; Healthcare

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36) Sugumar, D.[a] , Trinita Princy, S.[a] , Angelin Sarah, D.[a] , Anita Jones, T.[a] , Aezhisai Vallavi, M.S.[b]

Capacitive disc fed GPS antenna operating at L Band
(2019) *International Journal of Innovative Technology and Exploring Engineering*, 8 (10), pp. 3656-3659.

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Abstract
A rectangular antenna, to work in the operating frequency of L band is designed with capacitive disc fed for GPS application. The antenna gain aimed to have 2dBi. The capacitive disc is utilized for the increment of impedance bandwidth. It is designed using CADFEKO 7.0 and obtained the output with improved bandwidth and good return loss. Moreover, much improved reflection coefficient of the proposed antenna is obtained and it has been analyzed. With reference to simulation results, reflection coefficient at 1.13 GHz is attained as-34.18 dB with bandwidth of 140 MHz and at 1.34 GHz is-26.13 dB with the bandwidth of 230 MHz. © BEIESP.

Author Keywords
Capacitive Disc; GPS; L Band

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37) Sugumar, D.[a] , Harshavarthan, V.[a] , Kavisri, S.[a] , Aezhisai Vallavi, M.S.[b] , Vanathi, P.T.[c]

Citrus classification and grading using machine learning algorithms
(2019) *International Journal of Innovative Technology and Exploring Engineering*, 8 (10), pp. 2616-2621. Cited 1 time.

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Abstract
Sorting of fruit into different grade is essential to fetch high price in the market. The fruits are graded based on height, size, area and weight. Each and every fruit changes the skin's color in their life span. Hence, it is appropriate to grade them by processing color images of them and then applying estimation or recognition techniques on those images. Citrus (plant) grows even in temperature lands and it does not penetrate its root too deep. It is a precious commodity and used for various day to day activities. In this paper, Machine vision technique is used to sort citrus based on variety and quality. Primarily, the image is captured by a camera, placed at a particular distance. Then captured citrus image is classified into different categories, based on their color, size and quality. During the processing, the attributes are determined based on their defects in the surface of the citrus. Finally, the quality and breed are determined based on the three-color planes of color image and gray scale image respectively. ©BEIESP.

Author Keywords
Citrus; Classification; Machine learning; Machine vision; Unsupervised algorithm

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2-s2.0-85071224068

38) Vadhana, K.T.P.[a b] , Parveen, S.[c] , Ushadevi, B.[a] , Selvakumar, R.[a] , Sangeetha, S.[d] , Vairam, S.[a]

New barium, strontium and strontium-doped barium squarates: Synthesis, crystal structures and DNA/BSA binding, antioxidant and in vitro cytotoxicity studies
(2019) *Acta Crystallographica Section C: Structural Chemistry*, 75, pp. 1091-1101. Cited 4 times.

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Abstract
A new set of differently hydrated barium and strontium squarates, namely poly[[triaqua(-1,2-dioxocyclobut-3-ene-1,2-diolato)barium] monohydrate], {[Ba-(C4O4)(H2O)3]-H2O}n (1), poly[[diaqua(-1,2-dioxocyclobut-3-ene-1,2-diolato)-strontium] monohydrate], {[Sr(C4O4)(H2O)2]-H2O}n (2), and poly[[triaqua(-1,2-dioxocyclobut-3-ene-1,2-diolato)barium/strontium(0.85/0.15)] monohydrate], {[Ba0.85Sr0.15(C4O4)(H2O)3]-H2O}n (3), is reported. The study of their crystal structures indicates that all the complexes crystallize in the triclinic space group P1. Complexes 1 and 3 have a rare combination of squarate units coordinated through monodentate O atoms to two different metal atoms and through two bidentate O atoms to three different metal atoms. Furthermore, they have three coordinated water molecules to give a coordination number of nine. The squarate ligands in complex 2 exhibit two different coordination modes: (i) monodentate O atoms coordinated to four different Sr atoms and (ii) two monodentate O atoms coordinated to two different metal atoms with the other two O atoms bidentate to four different Sr atoms. All the compounds decompose to give the respective carbonates when heated to 800-C, as evidenced by thermogravimetry/differential thermal analysis (TG-DTA), which are clusters of nanoparticles. Complexes 1 and 3 show additional endothermic peaks at 811 and 820-C, respectively, indicating the phase transition of BaCO3 from an orthorhombic (-Pmcn) to a trigonal phase (-R3m). All three complexes have significant DNA-binding constants, ranging from 2.45-104 to 9.41-104 M-1 against EB-CT (ethidium bromide-calf thymus) DNA and protein binding constants ranging from 1.1-105 to 8.6-105 with bovine serum albumin. The in vitro cytotoxicity of the complexes is indicated by the IC50 values, which range from 128.8 to 261.3 mg ml-1. Complex 3 shows better BSA binding, antioxidant activity against the DPPH radical and cytotoxicity than complexes 1 and 2. © 2019.

Author Keywords
antioxidant study; barium complex; crystal structure; cytotoxicity.; protein binding; squaric acid; strontium complex

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39) Bakthavathsalam, S.[a] , Gounder, R.I.[b] , Muniappan, K.[c]

The influence of ceramic-coated piston crown, exhaust gas recirculation, compression ratio and engine load on the performance and emission behavior of kapok oil–diesel blend operated diesel engine in comparison with thermal analysis
(2019) *Environmental Science and Pollution Research*, 26 (24), pp. 24772-24794. Cited 12 times.

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Abstract
In this work, the development and usability of kapok oil in diesel engine was intended. With this purpose, the piston crowns are coated with mullite–lanthanum (ML) ceramic composite at varying compositions in order to reduce the heat rejection during combustion process. The kapok oil is blended with diesel fuel consisting of (20% kapok oil–80% diesel) volumetrically named B fuel. The B and diesel (D) fuels are taken for the engine performance test with different coated piston (ML1, ML2, and ML3) and exhaust gas recirculation (EGR—10%, 20%, and 30%), compression ratio (CR—16, 17, and 18) and engine load (50%, 75%, and 100%). Also, the engine performance study on brake thermal efficiency (BTE), brake-specific fuel consumption (BSFC), hydrocarbons (HCs), oxides of nitrogen (NOx), carbon monoxide (CO), smoke opacity, and numerical study using ANSYS software is carried out. When operated with ML2-coated pistons with B fuel, maximum BTE value of 29.2%, minimum BSFC value of 0.224 kg/kW-h, CO emission of 0.2%, and smoke opacity of 39 ppm were observed. The results showed that ML2-coated piston considerably improved the performance of the test engines when compared with

ML1 and ML3 coatings. Except for NOx emission, all other pollutant emission values were reduced. The numerical analysis using ANSYS software for ML2-coated pistons showed better retention of in-cylinder chamber temperature. © 2019, Springer-Verlag GmbH Germany, part of Springer Nature.

Author Keywords
Biodiesel; Ceramic coatings; Compression ratio; EGR; Engine load; Finite element analysis; Mullite; Thermal barrier coatings

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40) Jayanthi Sree, S., Vasanthanayaki, C.

De-Speckling of Ultrasound Images Using Local Statistics-Based Trilateral Filter
(2019) *Journal of Circuits, Systems and Computers*, 28 (9), art. no. 1950150, . Cited 3 times.

DOI: 10.1142/S0218126619501500

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Abstract
Speckle noise in ultrasound images is a major hindrance for the automation of segmentation, detection, classification and measurements of region of interest, to assist clinician for diagnosing pathologies. Speckle noise occurs due to constructive and destructive interference of the echo signals reflected from the target and has a granular appearance. Various techniques have been devised for speckle reduction. Most of these techniques are based on adaptive filters, wavelet transform and anisotropic diffusion filters. In this paper, a new speckle reduction technique based on the trilateral filter and local statistics of the image has been developed. The local speckle content of the image influences the trilateral filtering. The trilateral filter is a robust edge preserving filter which considers the similarity of neighboring regions in terms of adjacency, intensity and edge details. Hence, the new method preserves the finer details of the ultrasound images in the process of filtering speckle noise. The proposed technique is validated using synthetic, simulated and real-time clinical ultrasound images. Comparison of the proposed technique with the existing speckle removal algorithms in terms of quality metrics such as MSE, PSNR, UQI, SSI, FoM has been made and best results are obtained for the proposed technique. © 2019 World Scientific Publishing Company.

Author Keywords
adaptive filters; De-noising; local statistics; medical ultrasound images; speckle; trilateral filter

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41) Sakthivel, R.[a b] , Ramesh, K.[c] , Shameer, P.M.[d] , Purnachandran, R.[a]

A Complete Analytical Characterization of Products Obtained from Pyrolysis of Wood Barks of Calophyllum inophyllum
(2019) *Waste and Biomass Valorization*, 10 (8), pp. 2319-2333. Cited 15 times.

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Abstract

This research article aims to analyze the properties and characteristics of the products obtained from slow pyrolysis of wood barks of matured Calophyllum inophyllum (CI) tree. The bio-oil, gas and biochar obtained from the slow pyrolysis carried out at 550 °C in a fixed bed batch type reactor at a heating rate of 30 °C min−1 were characterized by different analytical techniques. Owing to the lofty volatile content of CI biomass (72.61%), it was chosen as the raw material in this current experimental investigation. FT-IR and GC–MS results of bio-oil showed the existence of elevated amount phenol derivatives, oxygenated compounds, acids, esters and furans. The physicochemical properties of the bio-oil sample were tested in accordance with ASTM standards which clearly showed that bio-oil is a highly viscous liquid with lower heating value as compared to that of diesel fuel. The chemical composition of pyrolytic gas was analyzed by using Gas Chromatography which revealed the presence of combustible organic components. The FT-IR results of biochar showed the presence of aromatic and aliphatic hydrocarbons whereas the increased amount of carbon in biochar reveals its potential to be used as solid fuel for commercial purposes. © 2018, Springer Science+Business Media B.V., part of Springer Nature.

Author Keywords
Calophyllum inophyllum; FT-IR; GC–MS; Pyrolysis; Wood bark

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42) Manikandan, V.[a] , Mirzaei, A.[b] , Vigneselvan, S.[c] , Kavita, S.[d] , Mane, R.S.[e] , Kim, S.S.[f] , Chandrasekaran, J.[g]

Role of ruthenium in the dielectric, magnetic properties of nickel ferrite (Ru-NiFe2O4) nanoparticles and their application in hydrogen sensors
(2019) *ACS Omega*, 4 (7), pp. 12919-12926. Cited 30 times.

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Abstract
In this work, Ru-doped nickel ferrites (NiFe2O4) were synthesized by a chemical co-precipitation method. Subsequently, they were annealed at different temperatures. The crystallinity of the samples was evaluated using X-ray diffraction and the morphology of the samples was investigated by scanning electron microscopy and transmission electron microscopy. Dielectric constants and dielectric loss were studied. Ru-doped nickel ferrite samples showed relatively low dielectric constant and loss. Also, the dielectric constant and loss decreased with increasing annealing temperature. Vibrational sample magnetometer analysis shows the hysteresis loop of a soft magnetic nature and the relevant parameters (Mr, Ms and Hc) have low values that confirmed the nature of the material. Subsequently, gas sensors were fabricated to study hydrogen-sensing properties. The gas sensors showed a response to hydrogen gas at a low temperature (100 °C) with selective response in the presence of NH3 and C2H5OH gases. The reasons for electrical, magnetic, and sensing behavior of the samples were discussed in detail. © 2019 American Chemical Society.

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43) Anbu Chudar Azhagan, S.[a] , Sathiya Priya, N.[b]

Solution growth of γ-glycine from cadmium sulphate as solvent for frequency doubling applications
(2019) *Materials Research Express*, 6 (9), art. no. 095101, .

DOI: 10.1088/2053-1591/ab2dc9

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Abstract
Monocrystal nonlinear optical material γ-glycine was synthesized from glycine and cadmium sulphate in 3:1 mol ratio at ambient temperature by using the slow solvent evaporation experiment. Monocrystal γ-glycine crystallized in trigonal crystal structure with non-centrosymmetric space group P32. The signature peak of γ-glycine was confirmed by x-ray powder diffraction examination. Chemical shift and Infrared studies exhibited the presence of chemical group species, resonance signal chemical shifts and functional groups present in the gamma glycine powdered samples. The existence of cadmium Cd element concentration in gamma glycine solution was quantified by inductively coupled plasma optical emission spectrometry (ICP-OES) instrument. Optical information and other parameters of γ-glycine such as crystal transparency, energy band gap, refractive index, electrical susceptibility, extinction coefficient, optical conductivity, electrical conductivity, optical reflectance, transmittance and absorbance was determined using UV-visible-NIR spectrophotometer. Thermal information such as weight-loss profile, thermal stability, decomposition temperature point, melting point and phase transition temperature were determined from TG-DTG and TG-DSC thermograms. The improved phase transition temperature in the TG-DSC thermogram established that suitability of the grown γ-glycine crystal for optoelectronic device fabrication applications. Green colour fluorescence emission was emitted from the crystal. The existence of frequency doubling in the grown γ-glycine crystal was examined. © 2019 IOP Publishing Ltd.

Author Keywords
characterization; Crystal structure; nucleation; optical properties; thermal analysis; x-ray diffraction

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44) Srinivasan, V.P.[a] , Palani, P.K.[b]

Experimental investigation on wire-electro discharge machining of tungsten carbide (WC) using Response Surface Methodology (RSM)
(2019) *Journal of New Materials for Electrochemical Systems*, 22 (3), pp. 155-158. Cited 1 time.

DOI: 10.14447/JNMES.V22I3.A07

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Abstract
In this work, Wire-Electro Discharge Machining (WEDM) of Tungsten Carbide (WC) was carried out using copper wire-electrode of diameter 0.25 mm. Diatomite powder mixed with distilled water is used as the dielectric fluid to increase the working fluid conductivity. Selection of appro-priate machining parameters in WEDM is one of the most important aspects taken into consideration as these conditions to determine the im-portant characteristics such as Material Removal Rate (MRR) and surface roughness (Ra) among others. The main machining parameters such as voltage (V), pulse-on time (Ton) and wire tension (WT) were chosen to determine listed technological characteristics. The characteristic features of the WEDM process are explored through Response Surface Methodology (RSM) based on Design of Experiments (DOE). From the results, it is evident that the pulse-on time is the most significant factor followed by the voltage and wire tension. © 2019 Ecole Polytechnique de Montreal. All rights reserved.

Author Keywords
DOE; Material Removal Rate; RSM; Surface roughness; Tungsten Carbide; WEDM

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45) Rengaraju, B.[a] , Vidhyadevi, U.[a] , Selvapriya, K.[b] , Ranganathan, B.V.[a] , Sneha, R.K.[a] , Vinothini, M.[a]

Optimization of culture conditions for cellulase production from indigenous soil isolates of Aspergillus fumigatus
(2019) *Research Journal of Chemistry and Environment*, 23 (7), pp. 75-80.

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Abstract
To appraise the utility and potential of wood pulp, present study was carried out to produce cellulase enzyme from soil isolated Aspergillus fumigatus. Lignocellulosic wood pulp is highly intricate in degrading; it was pre-treated with varying concentrations of alkali and detergents. Out of the varying concentrations of alkali and detergent carried out, it was found that 6 % NaOH yielded cellulase with 6.15 (µmol / (ml × min)) activities. Optimization of pH and temperature were carried out and the results revealed pH 10 and 70°C having higher cellulase activities. Further to purify the cellulase enzyme, culture broth was subjected to multi-phase extraction that involves a combination of ammonium sulphate salt and t-butanol solvent to purify proteins from crude culture filtrate. The purified cellulase enzyme isolated from aqueous phase was subjected to enzyme assay and showed 8.95 µmol/ min/ g specific enzyme activity. Thus, this study demonstrates the potential utilisation of wood pulp for the production of cellulase enzyme using low cost substrates. © 2019 World Research Association. All rights reserved.

Author Keywords
Aspergillus fumigatus; Cellulase; Lignocellulosic waste

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2-s2.0-85083590221

46) Naga Jyothi, G.[a] , Anusha, G.[b] , Debanjan, K.[a]

Low power design of 2–4 and 4–16 line decoders
(2019) *International Journal of Innovative Technology and Exploring Engineering*, 8 (9), pp. 1220-1224. Cited 1 time.

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Abstract
Here, we are proposing a novel design of 2:4 decoder and 4:16 decoders which are designed by using line decoder concept. By using proposed design, the area and power consumption of 2:4 decoder and 4:16 decoder can be reduced. In the existing work they have used DVL (Dual Value Logic) and Transmission gate Logic to implement a 14-Transistor 2:4 decoder for minimizing the transistor count. By using 2:4 pre-decoders and post-decoders they implemented 4:16 decoders. Mixed logic is also used for this purpose. Here we have implemented a single 2:4 decoder with minimum transistor count and low power consumption which is used to design a 4:16 decoder. We implement the proposed design in Cadence Virtuoso simulation at 90nm technology and calculated the power and area. © BEIESP.

Author Keywords
Decoder; Inverter; Mixed logic; Transmission logic

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47) Arun Selvi, K.[a] , Kumar, K.[b] , Ramalakshmi, K.[a] , Sathiya, A.[a]

A hybrid framework for TCP incast congestion control in data center networks
(2019) *International Journal of Recent Technology and Engineering*, 8 (2), pp. 798-806. Cited 1 time.

DOI: 10.35940/ijrte.F2701.078219

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Abstract
Cloud data centers with large bandwidth and low latency networks experiences many-to-one traffic pattern called TCP-incast. It occurs in the partition-aggregate architecture and causes emergence congestion at the network wharfconnected to the parent server, overcoming the port emergence buffer. The ending packet loss requires nodes to encounter loss, retransmit data and slowly rise up throughput per definitive TCP behavior. This paper proposes Receiver-oriented Congestion Control with Edge computing approach (RCCE) for enhancing the speed, nature and firmness of traffic performance. Receiver-oriented Congestion Control (RCC) combines both closed and open loop congestion controls at receiverwhereas edge computing involves localization of traffic management in the middle-tier aggregator for reducing Flow Completion Times (FCT) and latency for the entire application processing deployments. In addition, the centralized controller at the edge balances the load during incast by using spanning trees in a well-made manner by implementing multi-stage Clos networks. The entire prototype is implemented in ns3 and simulation results demonstrates that RCCE has an average decrease of 60.2 % in the 99thpercentage latency and 50.4 % of mean queue size in the heavy traffic over TCP. © BEIESP.

Author Keywords
Data Center Networks; Edge Computing; Incast; Receiver-oriented Congestion Control; TCP

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48) Adithya, G.T.[a] , Rangabhashiyam, S.[b] , Sivasankari, C.[a]

Lanthanum-iron binary oxide nanoparticles: As cost-effective fluoride adsorbent and oxygen gas sensor
(2019) *Microchemical Journal*, 148, pp. 364-373. Cited 19 times.

DOI: 10.1016/j.microc.2019.05.003

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Abstract
In the present work, novel lanthanum-iron binary oxide nanoparticles are used as adsorbents for fluoride removal from aqueous solution and oxygen gas sensor. The lanthanum-iron binary oxide nanoparticles were synthesized using co-precipitation method and sintered at a temperature of 100 °C, 450 °C, and 900 °C for 2 h. The material, optical and electrical properties of the nanoparticles were investigated by the instrumental characterization of high-resolution scanning electron microscope and high-resolution transition electron microscope to determine the structure, vibrating sample magnetometer which confirmed the superparamagnetic behavior, BET surface area analysis to affirm the mesoporous nature, X-ray photoelectron spectroscopy to confirm the oxidation states, X-ray diffraction, Fourier transform infrared spectroscopy, and I-V analysis, respectively. The adsorption of fluoride carried out in batch system, the experimental data were analyzed using isotherm and regeneration studies. The results demonstrated that the LIBONs sintered at 100 °C showed exceptional fluoride removal with maximum adsorption of 14.49 mg g −1 at pH 6.5 ± 0.5. The regeneration percentage of 80% was obtained after fifth cycle. The nanoparticles sintered at 900 °C rendered good sensitivity and response/recovery characteristics towards 50% of oxygen at operating temperature of 350 °C. © 2019 Elsevier B.V.

Author Keywords
Adsorption; Co-precipitation; Fluoride; Lanthanum-iron binary oxide nanoparticles; Oxygen gas sensor

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49) Baranitharan, P.[a] , Ramesh, K.[a] , Sakthivel, R.[b]

Analytical characterization of the Aegle marmelos pyrolysis products and investigation on the suitability of bio-oil

as a third generation bio-fuel for C.I engine
(2019) *Environmental Progress and Sustainable Energy*, 38 (4), art. no. 13116, . Cited 17 times.

DOI: 10.1002/ep.13116

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Abstract
The present investigation emphasis on characteristics of pyrolysis products was obtained by intermediate pyrolysis of Aegle marmelos (AM) deoiled seed cake and appropriateness of engine adaptation. The superior volatile matter (73.69%) contented AM biomass was elected as the feed stock in this study. Pyrolysis experiment was done by a fixed bed reactor at 600°C and obtained 42–55% bio-oil yield. Investigation of bio-oil by GC/MS and FTIR established the occurrence of methyl, ester, alkanes, ketones and oxygenated chemicals have been alternates for fossil fuels. SEM and EDX analysis of bio-char exposes activated carbon and ensured that biochar can be used in the waste water treatment plant, solid fuel, organic fertilizer, and natural mosquito destroyer. According to GC analysis, the presence of CH4, H2, and C2H6 evolved syngas in AM pyrolysis process can be used C.I engines at dual fuel mode operation. An engine test reveals that adding of the pyrolysis oil diminished BTE (%) and increasing BSEC (MJ/kWhr). However, increasing bio-oil ratio blend with diesel reduces hazardous emissions like CO, HC, NOx, and smoke in the exhaust. Based on engine results, it was proposed that equal to 20% of AM bio-oil can be used as a fuel substitute for diesel engines. © 2018 American Institute of Chemical Engineers Environ Prog, 38:e13116, 2019. © 2018 American Institute of Chemical Engineers

Author Keywords
AM seed cake; EDX; engine test; FTIR; GC/MS

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50) Karthik, V.[a] , Sivarajasekar, N.[b] , Padmanaban, V.C.[c] , Nakkeeran, E.[d] , Selvaraju, N.[e]

Biosorption of xenobiotic Reactive Black B onto metabolically inactive T. harzianum biomass: optimization and equilibrium studies
(2019) *International Journal of Environmental Science and Technology*, 16 (7), pp. 3625-3636. Cited 15 times.

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Abstract
Biosorptive removal of Reactive Black B (RBB) from aqueous solution by metabolically inactive Trichoderma harzianum (T. harzianum) was examined in this study. The individual and interactive effects of pH (2.0–10.0), temperature (25–45 °C), initial dye concentration (100–300 mg/L) and adsorbent dosage (0.1–0.5 mg/L) on the biosorption of RBB were evaluated using central composite design (CCD), and the mathematical model describing the biosorption process was developed. Maximum removal percentage (97.42 ± 1.3%) of RBB was attained at pH 5.75, temperature 37.12 °C, initial dye concentration 210.92 mg/L and biosorbent dosage 0.28 g/L. Suitability of the isotherms were determined using Langmuir, Freundlich and Temkin in this study, among which Freundlich isotherm was found suitable to equilibrium data. Kinetic analysis revealed that the adsorption data correlated well with pseudo-second-order kinetic model. The obtained thermodynamic data revealed that the RBB adsorption onto T. harzianum was exothermic and spontaneous nature during the process. © 2018, Islamic Azad University (IAU).

Author Keywords
Adsorption; Central-composite design; Isotherm; Kinetic; Thermodynamic

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51) Arunachalam Sivagurulingam, A.P.[a] , Sivanandi, P.[b] , Pandian, S.[a] , Arumugamurthi, S.S.[c] , Sircar, A.[c]

Optimization and kinetic studies on biodiesel production from microalgae (Euglena sanguinea) using calcium methoxide as catalyst
(2019) *Energy Sources, Part A: Recovery, Utilization and Environmental Effects*, 41 (12), pp. 1497-1507. Cited 29 times.

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Abstract
The present work investigates the production of biodiesel from Euglena sanguinea microalgal bio-oil using calcium methoxide as a heterogeneous catalyst. The catalyst was synthesized and characterized by Fourier Transform Infra-red (FTIR) spectroscopy, Scanning Electron Microscopy (SEM), X-ray Diffraction (XRD), Brunauer-Emmett-Teller (BET), basicity, and basic site strength analysis. Initially, bio-oil was extracted from mass-cultivated biomass obtained from Euglena sanguinea algae. It was further pretreated and transesterified using calcium methoxide catalyst at various experimental conditions by which an optimum yield of 94.83% was achieved. The catalyst yielded above 90% up to 5 cycles of recovery and recycling. The kinetic studies were investigated at various reaction temperatures to find the rate of reaction. The activation energy and pre-exponential factor for the transesterification reaction were found to be 99.33 kJ mol−1 and 1.07 × 1014 min−1 respectively. The properties of the produced biodiesel were within the limits of ASTM D6751 standard. © 2019, © 2019 Taylor & Francis Group, LLC.

Author Keywords
biodiesel; calcium methoxide; Euglena sanguinea; kinetics; transesterification

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52) Sharmila, G.[a] , Muthukumaran, C.[a] , Saraswathi, H.[a] , Sangeetha, E.[a] , Soundarya, S.[a] , Kumar, N.M.[b]

Green synthesis, characterization and biological activities of nanoceria
(2019) *Ceramics International*, 45 (9), pp. 12382-12386. Cited 25 times.

DOI: 10.1016/j.ceramint.2019.03.164

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Abstract
Nanoceria green synthesis using Pisonia alba leaf extract was reported in this study. UV–Vis spectroscopy, TEM, EDX, XRD and FTIR were employed to characterize the synthesized nanoceria (CeO 2 nanoparticles). The nanoceria synthesis and size were confirmed by UV–Vis and TEM analysis. The cerium signals observed in the EDX spectrum revealed that the synthesized nanoceria was pure in nature. The cubic fluorite crystal structure of the nanoceria was confirmed from XRD analysis. The chemical bonds pertaining to the bioreducing phytochemicals in P. alba leaf extract were identified by FTIR analysis. Nanoceria showed good antioxidant activity which was assessed by DPPH and FRAP assay. P. alba leaf extract derived nanoceria was highly inhibited the growth of Aspergillus flavus and Fusarium solani fungal strains. The antioxidant and antifungal properties of P. alba leaf extract derived nanoceria can make it as a suitable candidate for biological applications. © 2019 Elsevier Ltd and Techna Group S.r.l.

Author Keywords
Antifungal; Antioxidant; Nanoceria; Pisonia alba

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53) Mohanapriya, C.[a] , Uma, S.[b] , Nithyalakshmi, V.[b] , Rajmohan, K.S.[c] , Vijay, P.[c] , Pulla, R.H.[c] , Muthukumaran, C.[d] , Gopinath, M.[c]

In Vitro Evaluation of Secondary Metabolites: Characterization and Antimicrobial Activity of Manilkara zapota L. Seed Extract
(2019) *Proceedings of the National Academy of Sciences India Section B - Biological Sciences*, 89 (2), pp. 729-738. Cited 2 times.

DOI: 10.1007/s40011-018-0989-6

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Abstract
In the present study, seed extracts were analysed for its effective biological activity. The seed extracts were primarily subjected to qualitative and quantitative phytochemical analysis and further preceded to techniques such as TLC and bioautography to determine the active compounds through spot specification. The active compounds were further premeditated by GC–MS and FT-IR methods for antimicrobial analysis by agar well diffusion assay against few human pathogens including multidrug resistant phenotypes. The acetone extract of M. Zapota seeds revealed the presence of a significant number of secondary metabolites that ascertained that the plant possesses a rich group of bioactive compounds. The extract was quantified for its total phenolics (67.15 ± 4.35 mg/g), tannins (49.93 ± 8.76 mg/g) and flavonoids (60.06 ± 6.4 mg/g) respectively. GC–MS analysis exhibited the presence of 30 active compounds including both saturated and unsaturated fatty acids. FTIR analysis indicated 16 functional concrete structures of alkanes, alkenes, amines and aliphatic amines. Moreover, RF values calculated for the TLC spots along with the DPPH sprayed biography shows the presence of antioxidant compounds. Among the investigated microorganisms, Micrococcus luteus, Candida albicans and MRSA E-1122 strain exhibited the highest zone of inhibition. The present study provides convincing evidence that M. zapota seeds possess significant activity over human pathogens and MDR-MRSA by its active biocompounds present in the extract that helps to reduce oxidative stress by carrying off an antioxidant molecule that could be developed into therapeutic agents. © 2018, The National Academy of Sciences, India.

Author Keywords
Antimicrobial activity; Antioxidant; FTIR; GC–MS; M. zapota; Pathogens

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54) Janani, S.[a] , Thenmozhi, R.[b] , Jayagopal, L.S.[c]

Theoretical Investigations for the Verification of Shear Centre and Deflection of Sigma Section by Back Propagation Neural Network Using Python
(2019) *Archives of Civil Engineering*, 65 (2), pp. 181-192. Cited 3 times.

DOI: 10.2478/ace-2019-0027

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Abstract
The most important challenges in the construction field is to do the experimentation of the designing at real time. It leads to the wastage of the materials and time consuming process. In this paper, an artificial neural network based model for the verification of sigma section characteristics like shear centre and deflection are designed and verified. The physical properties like weight, depth, flange, lip, outer web, thickness, and area to bring shear centre are used in the model. Similarly, weight, purlin centres with allowable loading of different values used in the model for deflection verification. The overall average error rate as 1.278 percent to the shear centre and 2.967 percent to the deflection are achieved by the model successfully. The proposed model will act as supportive tool to the steel roof constructors, engineers, and designers who are involved in construction as well as in the section fabricators industry. © 2019 S. Janani et al., published by Sciendo.

Author Keywords
Artificial Neural Network (ANN); Back Propagation Neural Network (BPNN); Deflection; Roof Construction; Shear Centre; Sigma section

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55) Meiaraj, C., Jeyapriya, S.P.

Comparative study of evapo-transpiration and rainfall analysis of Pollachi watershed in Coimbatore, Tamil Nadu, India
(2019) *Indian Journal of Geo-Marine Sciences*, 48 (6), pp. 853-856.

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Abstract
The present study was about the analysis of rainfall data and estimation of evapo-transpiration values for the predominant crops in Pollachi watershed area. The average monthly rainfall data for the period of 10 years (2004-2013) of Pollachi region of Coimbatore district inferred that the 46% of rainfall is received during south-west monsoon and 34% of rainfall is received from north-east monsoon seasons. From the comparative study of evapo-transpiration, it is observed that the value found out by the Penman method is low and the value obtained by the Hargreaves class A pan evaporation method is high. From the study, it is suggested that Penman method is most suitable for evapo-transpiration estimation. © 2019, National Institute of Science Communication and Information Resources (NISCAIR). All rights reserved.

Author Keywords
Cropwat; Evapo-transpiration; Frequency; Pollachi; Rainfall; Watershed

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56) Meiaraj, C., Jeyapriya, S.P.

Marine water quality studies at Tuticorin harbour coastal area
(2019) *Indian Journal of Geo-Marine Sciences*, 48 (6), pp. 943-946. Cited 8 times.

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

Abstract
Rapid population growth and increasing industrial activities including marine activities have resulted in increasing water pollution, which is considered as one of the primary issues of environmental pollution in coastal region of developing countries including coastal area of Tuticorin harbour in Tamilnadu, India. Seawater samples were collected from three different sampling points in Tuticorin coastal area to study the physical and chemical characteristics, using various analytical techniques. The studies reveal that the physical and chemical composition of all the samples collected from the sites mainly

depend on the discharge from the sources of pollutants and all the physico-chemical parameters are within the permissible limits.

Author Keywords
Chemical parameters; Marine pollution; Tuticorin harbor; Water quality

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57) Azhagan, S.A.C., Kathiravan, V.S.

Selective crystallization of gamma glycine for NLO applications using magnesium sulfate (MgSO4) as an additive
(2019) *Materials Science- Poland*, 37 (2), pp. 265-279. Cited 8 times.

DOI: 10.2478/msp-2019-0028

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Abstract
Crystallization of γ-glycine in the presence of selected concentration (9 g/mL) of tailor-made additive magnesium sulfate heptahydrate salt (MgSO4·7H2O) has been studied at ambient temperature by adopting slow solvent evaporation procedure. The morphological modifications of glycine crystals grown from pure aqueous solutions of glycine and from glycine solutions containing magnesium species in the amount of 0.1 g/mL to 16 g/mL have been investigated thoroughly. The crystalline nature and phase identification of the crystalline material were confirmed by X-ray powder diffraction and SXRD studies. NMR studies revealed the information about the molecular conformation in solution, phase changes, functional groups and chemical environment. FT-IR spectra revealed distinct difference between α and γ-glycine polymorphs in the region around 880 cm-1 to 930 cm-1. The grown γ-glycine crystal had a lower cut-off value at 200 nm and the bandgap value evaluated from the Tauc plot was found to be 5.83 eV. The marked differences between α and γ-polymorphs of glycine were also revealed by DSC thermograms. The mechanical strength of the γ-glycine crystal was studied with the help of Vickers microhardness instrument. Kurtz-powder NLO study proved the generation of second harmonics (i.e. green light emission) in the grown γ-glycine crystal and its efficiency was calculated as 1.44 times better than that of the reference material potassium dihydrogen phosphate. © 2019 S. Anbu Chudar Azhagan et al., published by Sciendo.

Author Keywords
crystal morphology; nucleation; single crystal growth; solubility; solvents; X-ray diffraction

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58) Sakthivel, R.[a] , Ramesh, K.[b] , Joseph John Marshal, S.[c] , Sadasivuni, K.K.[d]

Prediction of performance and emission characteristics of diesel engine fuelled with waste biomass pyrolysis oil using response surface methodology
(2019) *Renewable Energy*, 136, pp. 91-103. Cited 62 times.

DOI: 10.1016/j.renene.2018.12.109

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Abstract
Advanced third generation biofuels like pyrolysis oil generated from waste biomass paves way for a cleaner and sustainable environment. An experimental-cum-statistical analysis was performed with the aim of determining the optimal engine

operating conditions (with respect to compression ratio, load and fuel blend) to enhance the engine operating characteristics (performance and emission) of a diesel engine. Multiple regression models designed by using response surface methodology (RSM) for the output response variables like brake specific fuel consumption (BSFC), brake thermal efficiency (BTE), oxides of carbon (CO&CO2), hydrocarbon (HC), oxides of nitrogen (NOx) and smoke opacity were found to be statistically significant by analysis of variance. Optimization was carried out using desirability approach with a target of maximizing BTE and CO2 simultaneously by minimizing all other responses. From the results, it can be observed that the optimum conditions for bio-oil operation were 18:1 compression ratio, 20% fuel blend and 100% load. The models developed by RSM were validated through confirmatory experiments and found that the models were satisfactory to report the influence of compression ratio, load and bio-oil concentration on the operating characteristics of the diesel engine as the error in prediction is within 5%. © 2019 Elsevier Ltd

Author Keywords
Bio-oil; Calophyllum inophyllum; Optimization; Pyrolysis; RSM; Waste biomass

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2-s2.0-85060050947

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

Experimental investigation on improvement of storage stability of bio-oil derived from intermediate pyrolysis of Calophyllum inophyllum seed cake
(2019) *Journal of the Energy Institute*, 92 (3), pp. 768-782. Cited 25 times.

DOI: 10.1016/j.joei.2018.02.006

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Abstract
Due to the unstable nature of bio-oil, it becomes mandatory to analyze the changes in physical and chemical properties of the bio-oil during storage to appreciate its chemical instability, for developing stabilization strategies. The present study aims to investigate the oxidative and thermal stability of bio-oil extracted from pyrolyzing Calophyllum inophyllum (CI) deoiled seed cake in a fixed bed reactor at 500 °C under the constant heating rate of 30 °C/min. Each stability analysis method involve an accelerated aging procedure based on standards established by ASTM (D5304 and E2009) and European standard (EN 14112). Fourier Transform Infrared Spectroscopy and Gas Chromatography-Mass Spectrometry were employed to analytically characterize the un-aged 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 crude sample. Addition of methanol reduced the change in viscosity of bio-oil by 38.55% during accelerated aging process. The oxidation stability index of bio-oil stabilized with methanol was found to be 3.97 h which is in accordance with ASTM D6751. FT-IR and GC-MS results showed an increase in the relative concentration of C-O (carboxylic acids, ethers and esters) and C=O (carbonyl) functional groups in aged bio-oil samples. © 2018 Energy Institute

Author Keywords
Calophyllum inophyllum; Methanol; Oxidation; Stability; Viscosity

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60) Mansoor, M.J., Kumar, R.

DESIGN OF SOLAR PV BASED SHUNT ACTIVE FILTER FOR NONLINEASR LOAD
(2019) *International Research Journal of Multidisciplinary Technovation*, 1 (3), pp. 40-47.

DOI: 10.34256/irjmt1935

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Abstract
Elevation of power electronics technology, converter are the main causes for power quality issues, because of their high switching characteristics.so to reduce the harmonics injected by the nonlinear load, the filters are play a major role to improve a power quality improvement, particularly shunt active filter is more reliable for reduce a harmonic in power system network. This novel technique proposed for design a shunt active filter with solar photovoltaic array integrated into nonlinear load using a Point of Common Coupling (PCC) technique. Zero crossing detection technique are used to extract the magnitude of a fundamental active components of distorted load currents. The estimation of harmonic isolator and current compensation are controlled by Field Programmable Gate Array (FPGA) controller, different types of compensation techniques are used in this work Synchronous reference frame theory, instantaneous reactive power theory (PQ) and hysteresis current control technique. These techniques enable extraction of active power, regulates a load voltage and maintain a phasor sequence at PCC under the voltage sag and swell. Simulation is carried out by MATLAB/SIMULINK for different compensations techniques and Total Harmonics Distortion (THD) values are tabulated.

Author Keywords
Field Programmable Gate Array (FPGA); Photovoltaic (PV); Point of Common Coupling (PCC)

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61) Geetha, T., Chitra, S.

COORDINATION CONTROL OF MICROGRID USING SLIDING MODE CONTROLLER
(2019) *International Research Journal of Multidisciplinary Technovation*, 1 (3), pp. 57-64.

DOI: 10.34256/irjmt1937

Department of EEE, Government College of Technology, TN, Coimbatore, India

Abstract
Traditional power generation and consumption are undergoing major transformation. One of the tendencies is to integrate microgrid into the distribution network with high penetration of renewable energy resources. A synchronous generator and a PV farm supply power to the system's AC and DC sides, respectively. A DC/DC boost converter with a maximum power point tracking (MPPT) function is implemented to maximize the energy generation from the PV farm. In the existing system a model predictive power and voltage control (MPPVC) method is developed for the AC/DC interlinking converter this has a drawback in smooth grid synchronization. But in the proposed system a sliding mode controller is used to link the AC bus with the DC bus while regulating the system voltage and frequency and it ensures smooth power transfer between the DC and AC sub grids. Meanwhile, smooth grid synchronization and connection can be achieved. Proposed constant frequency sliding mode control retains the advantages of good dynamic response as in hysteresis control, better reference tracking switching frequency and less sensitivity to parameter variations and non liner loads. From the Simulation results it is verified that the proposed topology is coordinated for power management in both AC and DC sides under critical loads with high efficiency, reliability, and robustness under both grid-connected and islanding modes.

Author Keywords
permanent magnet synchronous generator (PMSG); Power Quality (PQ); Pulse Width Modulation (PWM); Renewable Energy Sources (RES); sliding mode controller (SMC)

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2-s2.0-85166776079

62) Sugumar, B.K.[a] , Balaraman, S.[b]

A WAVELET BASED DIFFERENTIAL ALGORITHM FOR BUSBAR PROTECTION
(2019) *International Research Journal of Multidisciplinary Technovation*, 1 (3), pp. 28-39.

DOI: 10.34256/irjmt1934

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Abstract
Busbar protection is an essential component in power system design, protecting the most important system node for network stability and security. When faults occurs on busbar itself, it takes much time to isolate the bus from source which may cause much damage in the bus system. Faults in power system are classified as internal and external faults. Faults within the zone are termed as internal faults whereas, the faults outside the Zone are called as external faults. Ideally, a relay looking after the protection of a zone should operate only for internal faults. It should restrain from operating for external faults or through faults. In this paper the busbar protection using differential protection scheme has been investigated for internal and external faults. An algorithm has been developed to improve the selectivity of the relay and the same has been tested in IEEE9 bus system for internal and external faults. Separation of De-noised signal from fault signal is made using wavelet transform so that the nature of fault occurs on the system can be identified. In this study Daubechies 4 at level 3 is used to separate original signal and de-noised signal. The entire simulation has been done using MATLAB R2017a.

Author Keywords
Busbar protection; Internal and external faults; Mother Wavelet; Works on busbar protection

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2-s2.0-85166758138

63) Devarajan, S., Chitra, S.

LOAD FORECASTING MODEL FOR ENERGY MANAGEMENT SYSTEM USING ELMAN NEURAL NETWORK
(2019) *International Research Journal of Multidisciplinary Technovation*, 1 (3), pp. 48-56. Cited 1 time.

DOI: 10.34256/irjmt1936

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Abstract
Electric load forecasting is used for forecasting of future electric loads. Since the economy and reliability of operations of a power system are greatly affected by electric load, cost savings mainly depend on load forecasting accuracy. An accurate system load forecasting which is used to calculate short-term electric load forecasts, is an essential component of any Energy Management System (EMS). This can be improved by making use of Artificial Neural Networks (ANN). Existing Boosted Neural Networks (BooNN) technique helps in reduction of forecasting errors and variation in forecasting accuracy. However it is not flexible to rapid load changes.In the proposed work, Elman Neural Network technique is considered. This technique improves the load forecasting accuracy. The proposed method is implemented in IEEE 14 bus system. Simulation results showed that this method has increased the Voltage profile and also the active power losses have been reduced. Overall power transfer capability has been improved. Also the computational time has been minimized when compared to the existing techniques.

Author Keywords
Elman Neural Network; Energy Management System(EMS); Forecasting

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2-s2.0-85083979568

64) Sasikumar, A., Gopi, S., Mohan, D.G.

Effect of magnesium and chromium fillers on the microstructure and tensile strength of friction stir welded dissimilar aluminium alloys
(2019) *Materials Research Express*, 6 (8), art. no. 086580, . Cited 10 times.

DOI: 10.1088/2053-1591/ab1cd6

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Abstract
Aluminium alloy plays a vital role in major engineering industries due to its high strength to weight ratio. Friction stir welding is a well-established technique to weld aluminium for more than three decades. The objective of the work is to introduce the filler materials (Mg & Cr) between the joints during welding to improve the joint strength and corrosion resistance property. The tool rotational speed, welding speed, plunge depth, center distance between the filler holes, and powder mixing ratio are considered as major parameters. The tensile strength test and microstructure evaluations are done. The best result was gained with the process parameters combination of 1000 rpm tool rotational speed, 120 mm min-1 welding speed, 0.15 mm plunge depth, center distance between the filler holes 2 mm, and powder mixing ratio 95% Mg and 5% Cr. © 2019 IOP Publishing Ltd.

Author Keywords
aluminium alloy; center distance; dissimilar joint; filler holes; Friction stir welding; powder mixing ratio; tensile strength

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65) Dhas Bensam, S., Maruthu Pandi, P.

A hybrid MWOAL approach for fast and efficient maximum power point tracking in wind energy conversion systems
(2019) *Journal of Renewable and Sustainable Energy*, 11 (3), art. no. 033302, . Cited 12 times.

DOI: 10.1063/1.5080784

Department of Electrical and Electronics Engineering, Government College of Technology, Coimbatore, India

Abstract
This paper proposes an efficient hybrid approach for the fast and efficient MPPT in WECS. The system consists of an MPPT based control of IPMSG consisting of a hybrid Meta-heuristic algorithm. The hybrid Meta-heuristic algorithm presented in the proposed approach is the joined execution of both WOA and the ALO algorithm named as MWOAL. In the proposed approach, the WOA is considered to resolve the optimal gain parameters of the PI controller with a minimum error objective function based on the variation of direct and quadrature current parameters. Here, the searching behavior of the whales is modified by using the efficient ALO algorithm is known as modified WOAL MWOAL. The setpoint direct axis and the quadrature axis current parameters of the WECS are determined using the MPPT technique and the loss minimization approach based on the generator speed variation. Hence, the proposed scheme has improved the efficiency of the WECS. At that point, the performance of the proposed adaptive MPPT control of WECS is executed in the MATLAB/Simulink working platform and the execution is assessed using the existing techniques. © 2019 Author(s).

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2-s2.0-85065140759

66) Mahakavi, P.[a] , Chithra, R.[b] , Kavitha, K.[b]

Effect of recycled coarse aggregate and foundry sand on the properties of self-compacting concrete
(2019) *Magazine of Concrete Research*, 71 (9), pp. 449-460. Cited 12 times.

DOI: 10.1680/jmacr.17.00455

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Abstract
In this paper, the possibility of utilising foundry sand and recycled coarse aggregate (RCA) obtained from a ready-mix concrete plant for making self-compacting concrete (SCC) was evaluated. In this experiment, 25 concrete mixes were made

in which the substitution of RCA was 0, 25, 50, 75 and 100% as coarse aggregate and substitution of foundry sand was 0, 10, 15, 20 and 25% as fine aggregate. The cement content, water and silica fume were kept constant for all 25 mixes. The effects of foundry sand and RCA on the fresh properties of concrete and the hardened properties of SCC were evaluated. The results of the investigation showed that the hardened properties of concrete with 20% foundry sand were significantly improved when compared to conventional concrete. However, the hardened properties of the SCC with 100% RCA were poorer than for conventional concrete with 100% natural coarse aggregate. Strength decreases with the increase in percentage of substitution of RCA. It was found that an M20 grade of structural SCC was achieved with 75% substitution of RCA.

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67) Manikandan, V.[a] , Sikarwar, S.[b] , Yadav, B.C.[b] , Vigneselvan, S.[c] , Mane, R.S.[d] , Chandrasekaran, J.[e] , Mirzaei, A.[f]

Rapid humidity sensing activities of lithium-substituted copper-ferrite (Li−CuFe 2 O 4) thin films
(2019) *Materials Chemistry and Physics*, 229, pp. 448-452. Cited 20 times.

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Abstract
In this study, nanocrystalline lithium-substituted copper ferrite (Li–CuFe 2 O 4) nanoparticles with high surface area were synthesized by using a facile and cost-effective wet chemical co-precipitation method followed by crystallization at 900 °C. The powder X-ray diffraction pattern endows the crystalline behavior with minimum crystallite size of 13 nm. The scanning electron microscopy image has confirmed an irregular nanoparticles formation where as the transmission electron microscopy image has identified cubical shaped crystals of polycrystalline nature, approved from the respective selected area electron diffraction spectrum. Thin films of Li–CuFe 2 O 4 are envisaged as humidity sensors where moderate sensitivity of 2.2 MΩ/% RH towards the entire range of humidity and fast response/recovery time of 7/36 s is obtained. Notably, as-fabricated humidity sensor of Li–CuFe 2 O 4 has confirmed ~99% reproducibility, confirming its chemical stability and mechanical robustness for commercial viability.

Author Keywords
Ferrite materials; Humidity sensor; Nanostructure material; Thin films

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68) Bagavathy, S.[a] , Maruthupandi, P.[b]

Sensorless cluster based neural-fuzzy control strategy for four quadrant operation of three phase BLDC motor with load variations
(2019) *Cluster Computing*, 22, pp. 6855-6864. Cited 2 times.

DOI: 10.1007/s10586-017-1639-0

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Abstract
Brushless DC (BLDC) motors are, in fact, a type of permanent magnet synchronous motors with a very high level of efficiency. An attempt has been made in this research work to design and implement four quadrant control of a BLDC motor drive with regenerative braking in either direction with a Position sensor less neural-fuzzy controller. The complete closed loop system being speed-controlled, four quadrant operation has been obtained using step speed input while the suitability of the developed model has been tested under full load stress during steady state. The results obtained satisfy the four quadrant operation requirements of advanced drives where controlled starts and stops are essential in both forward and reverse directions. This is evident in the effectiveness of current and torque tracking and ease of speed transition from motoring to regeneration and vice versa. The design simulation of four quadrant control of the BLDC motor is carried out using MATLAB. A simulink model is developed to simulate and analyze the operation of the motor. A permanent magnet synchronous machine with trapezoidal back EMF is modeled as a BLDC machine. The developed model finds applications in advanced industrial drives as an energy-efficient and cost-effective alternative to eliminate the effects of supply voltage drops and mechanical load variations. © 2018, Springer Science+Business Media, LLC, part of Springer Nature.

Author Keywords
BLDC Motor; Fuzzy-neural; Load Variations; Sensor-less; Voltage Drops

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69) Manikandan, V.[a] , Kuncser, V.[b] , Vasile, B.[c] , Kavita, S.[d] , Vigneselvan, S.[e] , Mane, R.S.[f]

Enhancement in magnetic and dielectric properties of the ruthenium-doped copper ferrite(Ru-CuFe2O4) nanoparticles
(2019) *Journal of Magnetism and Magnetic Materials*, 476, pp. 18-23. Cited 31 times.

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Abstract
Ruthenium-doped copper ferriteRu-CuFe2O4nanoparticles (NPs) have been synthesized using a simple and cost-effective wet chemical co-precipitation deposition method. The crystallographic scanning electron microscopy images confirm cubic crystal structure and agglomerated-type surface appearance. The crystallite sizes are 6–24 nm in the range. Dielectric measurement analysis estimates the dielectric constant and loss of Ru-CuFe2O4 NPs. In this connection, dielectric constant and loss are reduced virtue of air annealing for various temperatures. Also, the dielectric loss confirms the relaxation peak. From magnetic measurement results, the coercivity decreases whereas saturation and remanence magnetization are increased. These features have approved the soft magnetic nature in the Ru-CuFe2O4 NPs. © 2018 Elsevier B.V.

Author Keywords
Copper ferrite; Dielectric properties; Ferrites; Microstructure; Soft magnetic nature

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70) Palanisamy, D.[a] , Balasubramanian, K.[b] , Manikandan, N.[c] , Arulkirubakaran, D.[a] , Ramesh, R.[d]

Machinability analysis of high strength materials with Cryo-Treated textured tungsten carbide inserts
(2019) *Materials and Manufacturing Processes*, 34 (5), pp. 502-510. Cited 30 times.

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Abstract
In some critical applications, Precipitation Hardened PH stainless steel 17Cr-4Ni is used in the hardened condition. After heat treatment, machining is difficult but possible with special attention. In this study, an effort has been taken to model the machinability evaluation of 17–4 PH stainless steel using Cryo-Treated textured tungsten carbide inserts via Response Surface Methodology (RSM). Different machining characteristics such as tangential force, surface roughness and vibration components in three axes were considered as responses. In this present investigation, three-dimensional (3D) surface plots were used to study the effect of process parameters such as machining speed, feed, and machining depth with their interactions. The study revealed that the combination of higher machining speed with lower feed results better surface finish and also the machining depth has a significant effect on surface roughness R a . Lower machining speed, lower feed and higher machining depth induced more vibration; however, the vibration was reduced at higher feed. The machining variables were optimized using response surface methodology desirability approach. Experimental results were in close conformity with the results of developed mathematical models, and optimal parameter was obtained through response surface method overlay plot. © 2019, © 2019 Taylor & Francis.

Author Keywords
CNC; Cryo-Treated; desirability; Texture; turning

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71) Arulkirubakaran, D.[a] , Balasubramanian, K.[b] , Raju, R.[c] , Palanisamy, D.[a] , Manikandan, N.[d]

Machinability studies on precipitation hardened stainless steel using cryo-treated textured carbide inserts
(2019) *Journal of Scientific and Industrial Research*, 78 (4), pp. 216-222. Cited 10 times.

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Abstract
Precipitation hardened stainless steel 17Cr-4Ni is martensitic steel posing high strength and excellent resistance against corrosion. Precipitation Hardened steel is considered as more difficult to machine materials and, consequently must be machined using different procedures. Response Surface Methodology (RSM) is applied to analyze the machinability characteristics of 17-4 PH steel using textured cryo-treated tungsten carbide inserts. The characteristics such as main cutting force, vibration acceleration in three axes and surface roughness Ra were taken as responses in dry turning of PH steel. Mathematical models were developed and validated using ANOVA. The optimal parameters were identified using graphical and numerical methods and the interactive effect of input parameters were also studied using three-dimensional surface plots. © 2019 Scientific Publishers. All rights reserved.

Author Keywords

Analysis Of Variance; Cryogenic Treatment; Cutting Force; Hardened Stainless Steel; Surface Roughness; Vibration Acceleration

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72) Tamilalagan, A.[a] , Singaram, J.[b] , Rajamohan, S.[c]

Generation of biodiesel from industrial wastewater using oleaginous yeast: performance and emission characteristics of microbial biodiesel and its blends on a compression injection diesel engine
(2019) *Environmental Science and Pollution Research*, 26 (11), pp. 11371-11386. Cited 23 times.

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Abstract
Microbial-derived biodiesel was tested on a lab scale CI diesel engine for carrying out exhaust emission and performance characteristics. The performance, emission, and combustion characteristics of a single cylinder four stroke fixed compression ratio engine when fueled with microbial bio-diesel and its 10–30% blends with diesel (on a volume basis) were investigated and compared with conventional diesel. The bio-diesel was obtained from microbes which were grown by combining distillery spent wash with lignocellulosic hydrolysate at nutrient deprived conditions. The microbes consumed the wastes and converted the high strength waste water into lipids, which were trans-esterified to form bio-diesel. Testing of microbial bio-diesel blends with ordinary diesel at different loading pressures and the emission characteristics were compared. Results indicate that with increasing of the blends, reduction of HC and CO emissions were observed, whilst brake thermal efficiency maxed out at 20% blending. Further increase of blends showed a tendency of increasing of both emissions in the exhaust stream. The Brake Specific Fuel consumption was observed to decline with blending until 20% and then increased. The nitrogen oxide emissions, however, were found to increase with increasing blend ratios and reached a maximum at 20% blend. The escalation of HC, CO, CO 2 , and NOx emissions was also observed at higher blending ratios and higher engine loads. The performance studies were able to show that out of the three blends of biodiesel, 20% biodiesel blend was able to deliver the best of reduced hydrocarbon and carbon monoxide emissions, whilst also delivering the highest Brake thermal efficiency and the lowest Brake Specific Fuel consumption. © 2019, Springer-Verlag GmbH Germany, part of Springer Nature.

Author Keywords
Biodiesel blends; Emission reduction; Microbial biodiesel; Specific fuel consumption; Thermal efficiency

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73) Sharmila, G.[a] , Muthukumaran, C.[a] , Suriya, E.[a] , Muppidathi Keerthana, R.[a] , Kamatchi, M.[a] , Kumar, N.M.[b] , Anbarasan, T.[c] , Jeyanthi, J.[c]

Ultrasound aided extraction of yellow pigment from Tecoma castanifolia floral petals: Optimization by response surface method and evaluation of the antioxidant activity
(2019) *Industrial Crops and Products*, 130, pp. 467-477. Cited 28 times.

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Abstract
Pigments are organic or inorganic compounds which are used as colouring agents in food, textile, cosmetics, and pharmaceutical industries. Presently, pigment extracted from natural sources gained more attention since it is eco-friendly and possess medicinal property. In this study, the extraction of yellow pigment from Tecoma castanifolia floral petals using ultrasonic waves was reported. Response surface method (RSM) was employed to optimize the extraction parameters such as flower mass, solvent concentration, time, and ultrasonic power. The pigment absorbance (OD), total phenolic content (TPC), and antioxidant activity (AA) were considered as responses. Response surface analysis predicted the optimal level of flower mass, methanol concentration, extraction time, and sonication power as 2 g, 100%, 15 min, and 30 W respectively for the maximum response of OD (3.46), TPC (246.6 mg/g), and AA (55.7%). The model obtained in the RSM was well fitted the validation experimental results. The phenolics, aromatic compounds and esters which may be responsible for the antioxidant capacity of the extracted pigment were confirmed by the GC–MS and FT-IR analysis. The yellow pigment extracted from T. castanifolia can be used as natural colouring agent and antioxidant additive to the food products. © 2019 Elsevier B.V.

Author Keywords
Antioxidant activity; Extraction; RSM; Total phenolic content; Ultrasound; Yellow pigment

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74) Krishnamoorthi, M.[a] , Malayalamurthi, R.[b] , Sakthivel, R.[c]

Optimization of compression ignition engine fueled with diesel - chaulmoogra oil - diethyl ether blend with engine parameters and exhaust gas recirculation
(2019) *Renewable Energy*, 134, pp. 579-602. Cited 48 times.

DOI: 10.1016/j.renene.2018.11.062

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Abstract
This study investigates the performance, combustion and emission characteristics of diesel (D)/straight vegetable oil (SVO)/diethyl ether (DEE) blend in a variable compression ratio engine (VCR), variable engine speed direct injection compression ignition (CI) engine. The compression ratio (CR), speed (N), and load (L) were taken as input factors for the diesel engine optimization. This investigation is done through a combination of experimental data analysis and artificial neural network (ANN) modeling. The response surface methodology (RSM) optimization concerned to minimize the engine emissions and maximize the engine performance. Three optimization works were conducted for 65% D+25% SVO+10% DEE blend, in optimization-1 (opti-1) considered 0% exhaust gas recirculation (EGR), Opti-2 considered 5% EGR and Opti-3 considered 10% EGR. Compared to diesel, carbon monoxide (CO), oxides of nitrogen (NOx), and hydrocarbon (HC) were reduced by 12.8%, 4.19% and 9.61% respectively for blend fuel in opti-2. © 2018 Elsevier Ltd

Author Keywords
ANN; Chaulmoogra oil; Compression ratio; EGR; Optimization; Speed

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75) Dharmarajan, R., Ramachandran, R.

PV Module Parameters Estimation Using Newton Raphson
(2019) *International Research Journal of Multidisciplinary Technovation*, 1 (2), pp. 137-149. Cited 2 times.

DOI: 10.34256/irjmt19219

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Abstract
The estimation of solar photovoltaic (PV) system with help of electrical model parameters, such as photon generated current, the diode saturation current, series resistance, shunt resistance, and diode ideality factor, are desirable to predict the real performance characteristics of solar PV under varying environmental conditions. Finally, performance indices, such as PV characteristics curve are estimated for the various solar PV panels, using Newton Raphson (NR) to reveal the effectiveness of the proposed method. Also, validation with `experimental data has been considered. Finally, through the comparative analysis of the results, it is revealed that the proposed method offers solar PV characteristics closer to the real characteristics.

Author Keywords
Newton Raphson (NR); Photovoltaic (PV)

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2-s2.0-85099298078

76) Sugumar, B.K., Balaraman, S.

Implementation of Differential Algorithm for Busbar Protection
(2019) *International Research Journal of Multidisciplinary Technovation*, 1 (2), pp. 150-157. Cited 2 times.

DOI: 10.34256/irjmt19220

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Abstract
Faults in power systems are classified as internal and external faults. Faults within the zone are termed as internal faults whereas; the faults outside the Zone are called as external faults. Ideally, a relay outward after the protection of a zone should operate only for internal faults. It should restrain from operating for external faults or through faults. In this project, the busbar protection using differential protection scheme has been investigated for internal and external faults. The current magnitude from the Current Transformer is compared with a preset value and when the current exceeds the preset value, and then a trip command is given to associated circuit breaker. In this work, an algorithm has been developed to improve the selectivity of the relay and the same is tested on three-phase bus bar having two incoming lines and three outgoing lines at different fault levels and the results are verified for internal and external faults. The entire algorithm is programmed and graphical views of relay performance are verified using the MP LAB platform.

Author Keywords
Busbar protection; CT saturation; Numerical relay; Ratio mismatch of CT secondary. Works on busbar protection

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77) Manikandan, V.[a] , Tudorache, F.[b] , Petrila, I.[c] , Mane, R.S.[d] , Kuncser, V.[e] , Vasile, B.[f] , Morgan, D.[g] , Vigneselvan, S.[h] , Mirzaei, A.[i]

Fabrication and characterization of Ru-doped LiCuFe2O4 nanoparticles and their capacitive and resistive humidity sensor applications
(2019) *Journal of Magnetism and Magnetic Materials*, 474, pp. 563-569. Cited 25 times.

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Abstract
Polycrystalline ruthenium-doped lithium-copper-ferrite (Ru-LiCuFe2O4)nanoparticles (NPs) are synthesized using a simple and cost-effective chemical co-precipitation method and annealed at different temperatures for increasing the crystallinity. The transmission and scanning electron microscopy images have confirmed the presence of soft agglomerations and cuboids for the samples annealed at 1100 °C. X-ray photoelectron results along with Raman spectra have collectively demonstrated the presence of Ru in the structure of Ru-LiCuFe2O4 NPs. The dielectric properties of as-synthesized Ru-LiCuFe2O4 NPs are investigated using LCR meter where the smaller NPs demonstrates a higher dielectric constant. Also, the results of magnetic measurements of annealed Ru-LiCuFe2O4 NPs have corroborated a soft magnetic nature due to the pinning sites that endow lower coercivity, remanence and saturation magnetization than that of the pristine one. The variation of permittivity and electrical resistivity with respect to frequency under humidity conditions suggested that this material has a potential to use as capacitive and resistive humidity sensor. The results of this study open the doors for utilization of metal-doped magnetic ferrites for humidity sensing applications. © 2018 Elsevier B.V.

Author Keywords
Electrical behavior; Humidity sensor; Magnetic properties; Particle size

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

Experimental assessment and multi-response optimization of diesel engine performance and emission characteristics fuelled with Aegle marmelos seed cake pyrolysis oil-diesel blends using Grey relational analysis coupled principal component analysis
(2019) *Environmental Science and Pollution Research*, 26 (7), pp. 6980-7004. Cited 17 times.

DOI: 10.1007/s11356-019-04164-8

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Abstract
This research focuses on the detailed experimental assessment of compression ignition (CI) engine behavior fuelled with Aegle marmelos (AM) seed cake pyrolysis oil blends. The study on effects of engine performance and emission a characteristic was designed using L 25 orthogonal array (OA). These multi-objectives were normalized through gray relational analysis (GRA). Likewise, the principal component analysis (PCA) was performed to assess the weighting values respective to every performance and emission characteristics. The variability induced by using the input process parameters was allocated using analysis of variance (ANOVA). Hence, GRA-coupled PCA were employed to determine the optimal combination of CI engine control factors. The greater combination of engine characteristics levels were selected with F 5 and W 5 . The higher brake thermal efficiency (BTE) have been obtained for F20 fuel as 22.01% at peak engine load, which is 11.43% for diesel. At peak load condition, F20 fuel emits 14.99% lower HC and 18.52% lower CO as compared to diesel fuel. The improved engine performance and emission characters can be attained by setting the optimal engine parameter combination as F20 blend at full engine load condition. The validation experiments show an improved average engine performance of 67.36% and average lower emission of 64.99% with the composite desirability of 0.8458. © 2019, Springer-Verlag GmbH Germany, part of Springer Nature.

Author Keywords
Aegel marmelos seed cake; Emission; Engine test; Grey relational analysis; Principal component analysis; Pyrolysis oil

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79) Natesan, V.[a] , Periyasamy, S.[b] , Muniappan, K.[a] , Rajamohan, S.[c]

Experimental investigation and exergy analysis on homogeneous charge compression ignition engine fueled with natural gas and diethyl ether
(2019) *Environmental Science and Pollution Research*, 26 (7), pp. 6677-6695. Cited 6 times.

DOI: 10.1007/s11356-018-04089-8

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Abstract
In this work, diethyl ether (DEE) and compressed natural gas (CNG) port fuel injection (PFI) was investigated in direct injection (DI) compression ignition engine to determine the performance, combustion, and emission behaviors. In dual fuel mode, DEE and neat diesel were used as fuel energy, whereas in homogeneous charge compression ignition (HCCI) mode, DEE, and CNG were used as fuel energy. The engine behavior was analyzed for different inlet charge temperatures. Exergy analysis has been carried out for analyzing the various availability shares in the engine. The maximum brake thermal efficiency of the engine increased at peak load from 27.31% in neat diesel to 29.12% for dual fuel mode (D + CNG). Hydrocarbon and carbon monoxide emissions were reduced and oxides of nitrogen increased with the inlet charge heating mode. Maximum exergy efficiency was observed as 57.1% in dual fuel operation. The result of this work proves that CNG in dual and HCCI are effective for engine operation. © 2019, Springer-Verlag GmbH Germany, part of Springer Nature.

Author Keywords
Charge inlet temperature; CNG; Diethyl ether; Dual fuel; HCCI

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2-s2.0-85059855067

80) Kumar, S.[a] , Sakthivel, M.[b] , Sudhagar, S.[c] , Nivethan, K.[b]

Two body abrasive wear characteristics of Al7068/Si3N4/BN hybrid composite
(2019) *Materials Research Express*, 6 (6), art. no. 066502, . Cited 3 times.

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Abstract
The present study emphasises the mechanical and tribological characteristics of stir cast Al7068/Si3N4/BN hybrid metal matrix composite. The composites were prepared at various weight percentages of Si3N4 and BN and their mechanical properties were evaluated. The composite with maximum tensile strength of 238.7 MPa was obtained for 10% Si3N4 and 5%BN. The abrasive wear test was conducted to evaluate wear rate of composites using pin-on-disc apparatus by varying abrasive grit size, load, sliding velocity and sliding distance. The Taguchi L27 orthogonal array was used to design the experiments and analyse the effect of process parameters. The ANOVA test revealed that the wear rate is highly influenced

by mass fraction of Si3N4 and grit size of abrasives. The worn out surface of wear test specimen was analysed using SEM to understand the mechanism of wear. © 2019 IOP Publishing Ltd.

Author Keywords
abrasive wear; ANOVA; composites

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81) M, V.P.[a] , K, R.[b] , P, S.[c] , R, B.[c] , Sircar, A.[c]

Kinetic and thermodynamic studies on the extraction of bio oil from Chlorella vulgaris and the subsequent biodiesel production
(2019) *Chemical Engineering Communications*, 206 (3), pp. 409-418. Cited 23 times.

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Abstract
This research article investigates the extraction of bio-oil from Chlorella vulgaris algae which is then subjected to biodiesel production. To evaluate the maximum oil content, four different pretreatment methods and solvent systems were inspected. Among them, maximum oil yield was obtained from ultrasonic pretreated biomass followed by methanol and methyl tertiary butyl ether solvent extraction. Physico-chemical properties of the bio-oil were analyzed as per AOAC Official Methods. The experiments were then designed to determine how variation in different process parameters influences extraction. From these results, kinetic and thermodynamic parameters were also analyzed. The positive values of ΔS and ΔH and the negative value of ΔG indicate that this process is endothermic, irreversible and spontaneous, respectively. The extracted bio-oil was then subjected to acid catalyzed reaction for biodiesel production. A yield of 98.2 wt% biodiesel was obtained at the optimized condition. Fuel properties were analyzed as per ASTM methods. © 2018, © 2018 Taylor & Francis.

Author Keywords
bio-oil; Biodiesel; extraction; kinetics; microalgae; thermodynamics

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82) Mohanakavitha, T.[a] , Divahar, R.[b] , Meenambal, T.[b] , Siraj, K.T.[b]

Assessment of water quality of surface water in kalingarayan canal for heavy metal pollution, Tamil nadu
(2019) *Indian Journal of Ecology*, 46 (1), pp. 49-54. Cited 5 times.

[a] Government College of Technology, Coimbatore, 641 013, India
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Abstract
Kalingarayan canal is one of the leading oldest canal in Erode district. Many industries are located along stretch of the canal and dumping most of the solids waste into the canal water. For the investigation, samples were collected from the above canal for analysing parameters like pH, EC, Fe, Cu, Mn, Cr, Zn, Cd, Pb and Ni for two years 2015 and 2016. The pH of the samples were in the alkaline state (7.2 to 7.89), whereas conductance was in the range of 529-2687 µs/cm. The average concentration of heavy metals in the surface water range from 0.045-8.530, 0.040-0.710, 0.023-0.723, 0.002-1.557, 0.001-0.009, 0.002-0.053, 0.009-0.097 and 0.140-2.698 mg/L for the metals Fe, Mn, Zn, Cu, Cd, Ni, Pb and Cr respectively. Heavy metal concentrations except Cd and Zn exceeds limit in all analysed samples in accordance with two standards, Bureau of Indian Standards and WHO. The dominance of various heavy metals in the surface water is follows the sequence: Fe > Cr >

Cu > Zn > Mn > Pb > Ni> Cd. The results revealed that there was negatively correlation of Cd with all the variables. Mn is positively and significantly correlated (at 0.05 level) in summer season with all the other studied parameters. This study revealed that quality of water in the canal is affected by anthropogenic activities and industrialization. © 2019 Ecological Society of India.

Author Keywords
Bis; Correlation; Solid waste; Surface water; Water quality; Who

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83) Praba Devi, G.S., Miraclin Joyce Pamila, J.C.

Accident Alert System Application Using a Privacy-Preserving Blockchain-Based Incentive Mechanism
(2019) *2019 5th International Conference on Advanced Computing and Communication Systems, ICACCS 2019*, art. no. 8728507, pp. 390-394. Cited 11 times.

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Abstract
In this era of rapid growth of vehicles, the ratio of road accident increases day by day. Nowadays, Traffic incidents are persistent problems in both developed and developing countries which result in huge loss of life and property. No one in this world is ready to gaze what's happening around them. Nobody cares even when an accident occurs. This paper provides an innovative solution by developing an Accident Alert Message System using an Android Smartphone Application that can be used from the accident zone. The application uses GPS technology for location mapping and sends an alert and notification of an accident. The generated accident alert message is endorsed by the nearby registered users who also witness the accident to ensure the increased reputation of the message. Based on the endorsement of the message, the system will instantly transmit the location of the accident to the nearby emergency services. In this case, users usually lack the enthusiasm to generate or endorse alert messages because they might fear that their privacy will be breached. At the same time, users do not benefit from generating or endorsing alert messages which also makes them lack the enthusiasm or motivation to respond to messages. In order to provide a solution to resolve these issues, this paper presents a novel privacy-preserving Blockchain - Based Incentive Mechanism for Accident Alert Message System. The main objective of the paper is to encourage the users to generate and endorse accident alert messages from the accident zone without revealing the user's identity. Also, some incentives to the users are paid to the message generators and endorsers and the transactions get stored based on the Blockchain technology; hence the privacy of the user is preserved. Our proposed system ensures the reliability of alert messages without revealing the privacy of the user and is reliable and efficient in the non-fully-trusted environment. © 2019 IEEE.

Author Keywords
Alert Message; Android Smart Phone; Blockchain.; GPS(Global Positioning System); GSM(Global System for Mobile Communication); Mobile Application

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84) Bagavathi, C., Saraniya, O.

Hardware Designs for Histogram of Oriented Gradients in Pedestrian Detection: A Survey
(2019) *2019 5th International Conference on Advanced Computing and Communication Systems, ICACCS 2019*, art. no. 8728486, pp. 849-854. Cited 4 times.

DOI: 10.1109/ICACCS.2019.8728486

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Abstract
Feature detection, narrowed down to pedestrian detection, is an imperative domain where automated applications such as Automatic Driver Support Systems, Robotics and similar image vision and machine vision technologies. Histogram of Oriented Gradients (HOG) is a robust, scalable and efficient feature extraction method that works on luminance gradients among neighboring pixels. The extracted feature is normalized and classified through support vector machines (SVM). Improvements in the design through approximate computations, parallelism and pipelining applied to SVM classification and histogram generation, Parallel implementation of entire HOG and exploration of possible applications of the algorithm. This paper cites the software improvements of HOG and hardware implementations targeted on FPGA for variations of HOG. © 2019 IEEE.

Author Keywords
Feature detection; FPGA implementation; Histogram of Oriented gradients; Resolution of images and frame rate

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85) Rahulkumar, J.[a] , Ranjithkumar, K.[b]

Efficient Utilization of Renewable Energy Employing SEPIC Converter for Standalone Solar PV System
(2019) *2019 5th International Conference on Advanced Computing and Communication Systems, ICACCS 2019*, art. no. 8728436, pp. 1083-1088. Cited 1 time.

DOI: 10.1109/ICACCS.2019.8728436

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Abstract
this paper an Efficient Utilization of Renewable Energy means the power generated from natural also called Renewable Energy Sources is utilized in instant at generation or stored properly in to the energy storage unit. This can be performed by designing power management unit for various conditions; this power can be managed between Solar PV system, Standalone DC load and Energy Storage unit. Employing SEPIC (Single Ended Primary Inductance Converter) as Power Modulator unit, which can modulates or convert the parameters related to the Power. In order to maintain standalone DC load with solar PV system is considered as renewable energy source employing SEPIC converter and with Better Power conditioning unit for renewable source. Here Perturb Observe Maximum Power Point Tracking system (PO-MPPT) Algorithm is developed for Power Conditioning Unit. © 2019 IEEE.

Author Keywords
DC-DC power Modulation; Energy storage unit; Solar PV; Standalone DC load

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86) Sreeja, G., Saraniya, O.

A Comparative Study on Image Registration Techniques for SAR Images
(2019) *2019 5th International Conference on Advanced Computing and Communication Systems, ICACCS 2019*, art. no. 8728390, pp. 947-953. Cited 4 times.

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Department of ECE, Government College of Technology, Coimbatore, India

Abstract
High resolution Synthetic Aperture Radar (SAR) images are extensively employed in many applications like object tracking,

object detection, image fusion, image mosaicing. Image registration is mandatory process for all these applications. To register SAR images, feature based registration methods have been successfully deployed in recent years. State of art detectors like Harris Corner, SIFT, SURF, BRIEF, ORB, etc. have been applied to align SAR images. Among all feature detectors, SIFT and SURF algorithm proved to give better solutions for the SAR image registration problem due to its invariance and robustness. So in this paper, the attempt is made to give a detailed survey of SIFT and SURF based SAR image alignment. © 2019 IEEE.

Author Keywords
Feature descriptors; Feature Matching.; Image registration; SIFT; SURF; Synthetic aperture radar (SAR)

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87) Priyadharshini, M., Anirha, A.

Implementation of Distributed Arithmetic based Sum-of-Products
(2019) *2019 5th International Conference on Advanced Computing and Communication Systems, ICACCS 2019*, art. no. 8728528, pp. 855-857.

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Abstract
This paper deals with approximate Sum-of-Products (SOP) models and its application in linear convolution. SOP unit finds its application in many DSP applications like convolution and design of filters. In this brief, three Approximate Sum-of-Products (ASOP) models have achieved comparable improvements in area and power. SOP units use the concept of distributed arithmetic to find the vector products without the use of multipliers. Performance is justified by using the distributed arithmetic model for linear convolution of input vectors. The approximate models have achieved significant improvements in area power parameters. © 2019 IEEE.

Author Keywords
Convolution; Distributed arithmetic; Lookup tables.; Sum of products (SOP)

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88) Adithya, G.T., Sivasankari, C.

Stable and microcrystalline Ce-Fe Bi-metal oxide nano particles: Synthesis, characterization and fluoride adsorption performance in drinking water
(2019) *Indian Journal of Chemical Technology*, 26 (2), pp. 122-130. Cited 3 times.

Department of Chemistry, Government College of Technology, Coimbatore, Tamil Nadu 641 013, India

Abstract
The cerium-iron bi-metal oxide nano particles have been prepared as an adsorbent for the removal of fluoride from drinking water. The incorporated cerium ion into iron oxide is characterized using transition electron micrograph (TEM), X-ray diffraction (XRD) and Fourier transform infrared spectroscopy (FTIR), and morphologically observed by scanning electron microscope (SEM), energy dispersive X-ray (EDX) and Brunauer-Emmet-Teller surface area analyzer (BET). The effects of various factors such as solution pH, adsorbent dosage, equilibration time, initial fluoride ion concentration, water solubility and zero point charge have been investigated. The results show that the adsorbent removed about 98% of fluoride from drinking water at both acid and basic pH range, and the nano particles have extremely small size, high surface area, greater stability and microcrystalline nature. The experimental results suggest that this nano-adsorbent is promising for treating fluoride contaminated water. © 2019, National Institute of Science Communication and Information Resources (NISCAIR).

Author Keywords
Adsorption; Bi-metal oxide; Co-precipitation; Fluoride; Nano particles

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89) Elango, R.K.[a] , Sathiasivan, K.[a] , Muthukumaran, C.[b] , Thangavelu, V.[a] , Rajesh, M.[a] , Tamilarasan, K.[a]

Transesterification of castor oil for biodiesel production: Process optimization and characterization
(2019) *Microchemical Journal*, 145, pp. 1162-1168. Cited 103 times.

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Abstract
In the present study, batch scale biodiesel production was carried out using castor oil by alkali-catalyzed transesterification process was reported. Initially, the transesterification parameters like reaction time, catalyst concentration, reaction temperature and oil: methanol molar ratio on biodiesel production was optimized by conventional method followed by statistical based central composite design method. According to the optimized experimental results, the maximum of 94.9% FAME yield was obtained at 60 °C with 1.25% (w/v) KOH catalyst and 1:12 oil: methanol molar ratio for 60 min of reaction, which was in agreement with the predicted yield (93.7%). The purification of crude biodiesel was performed by simple evaporation and silica gel adsorption. The quality of fatty acid methyl ester was examined by Fourier Transform Infrared spectroscopy (FT-IR), Thin layer chromatography (TLC) and Gas Chromatography–Mass Spectrometry (GC–MS). The analytical results showed that significant quantity of methyl ester groups like ricinoleic, linolenic, palmitic acid and oleic acid were present in the biodiesel. © 2018 Elsevier B.V.

Author Keywords
Biodiesel; Castor oil; GC–MS; RSM; Transesterification

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90) Muthusamy, S.[a] , Manickam, L.P.[a] , Murugesan, V.[b] , Muthukumaran, C.[c] , Pugazhendhi, A.[d]

Pectin extraction from Helianthus annuus (sunflower) heads using RSM and ANN modelling by a genetic algorithm approach
(2019) *International Journal of Biological Macromolecules*, 124, pp. 750-758. Cited 57 times.

DOI: 10.1016/j.ijbiomac.2018.11.036

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Abstract
In this work, Response Surface Methodology (RSM) and Artificial Neural Network coupled with genetic algorithm (ANN-GA)

have been used to develop a model and optimise the conditions for the extraction of pectin from sunflower heads. Input parameters were extraction time (10–20 min), temperature (40–60 °C), frequency (30–60 Hz), solid/liquid ratio (S/L) (1:20–1:40 g/mL) while pectin yield (PY%) was the output. Results showed that ANN-GA had a higher prediction efficiency than RSM. Using ANN as the fitness function, a maximum pectin yield of 29.1 ± 0.07% was searched by genetic algorithm at the time of 10 min, temperature of 59.9 °C, frequency of 30 Hz, and solid liquid ratio of 1:29.9 g/mL while the experimental value was found to be 29.5 ± 0.7%. Extracted pectin was characterised by FTIR and 13C NMR. Thus, ANN coupled GA has proved to be the effective method for the optimization of process parameters for pectin extraction from sunflower heads. © 2018 Elsevier B.V.

Author Keywords
Helianthus annuus (sunflower); Pectin; Response surface methodology

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91) Jayalakshmi, R., Jeyanthi, J.

Simultaneous removal of binary dye from textile effluent using cobalt ferrite-alginate nanocomposite: Performance and mechanism
(2019) *Microchemical Journal*, 145, pp. 791-800. Cited 49 times.

DOI: 10.1016/j.microc.2018.11.047

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Abstract
The rapid removal of dye effluent containing two or more dyes is in demand due to its significant environmental issues. The present communication deals with the simultaneous adsorption of Reactive red 195 (RR195) and Reactive yellow 145 (RY145) from a textile dye effluent in a binary component system. Cobalt ferrite-alginate nanocomposite synthesized by ex-situ polymerization was employed as an adsorbent for the removal of binary dye effluent. The first order derivative spectrophotometric method was applied for the simultaneous quantification of RR195 and RY145 in binary solutions. The binary adsorption equilibrium could be achieved within 60 min, and the adsorption process followed pseudo second order kinetics. The removal efficiency could be maintained in a wide pH range of 3–6. The presence of amine, hydroxyl, carbonate and ferrite groups on the adsorbent surface played a vital role in the removal of RR195 and RY145 from their binary mixture. The continuous adsorption experiments revealed that the breakthrough time and exhaustion time increases with an increase in the bed height. The experimental results present new sustainable, cost effective biocompatible nanocomposite as a potential adsorbent for the removal of real-time dye effluent. Moreover, it is magnetically separable and reusable. The cobalt ferrite-alginate as a sole nanocomposite is capable of eliminating the whole dye content from a mixture and serves as a better solution for effective water remediation. © 2018 Elsevier B.V.

Author Keywords
Binary dye adsorption; Cobalt ferrite-alginate; Column modelling; Fixed bed system; Nanocomposite

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92) Sharmila, G.[a] , Thirumarimurugan, M.[b] , Muthukumaran, C.[a]

Green synthesis of ZnO nanoparticles using Tecoma castanifolia leaf extract: Characterization and evaluation of its antioxidant, bactericidal and anticancer activities
(2019) *Microchemical Journal*, 145, pp. 578-587. Cited 235 times.

DOI: 10.1016/j.microc.2018.11.022

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Abstract
An efficient, facile and green synthesis of zinc oxide nanoparticles (ZnO NPs) using Tecoma castanifolia leaf extract was reported. ZnO NPs was characterized by UV–Vis spectroscopy, TEM, EDX, XRD and FTIR. Phytochemical constituents of T. castanifolia leaf extract were analyzed by GC–MS. UV–Vis absorption showed SPR band at 370–400 nm which confirms the formation of ZnO NPs. TEM analysis exhibits spherical shape with size 70–75 nm and XRD results revealed the hexagonal phase of wurtzite structure. FTIR spectra confirmed the presence of O–H, C–H, amide-I, II groups, C–O bond and metal-oxygen groups. The presence of bioactive phytochemical constituents in the methanolic extracts of T. castanifolia was identified by GC–MS. An excellent antibacterial activity was observed for both Gram positive and Gram negative bacteria. Results of antioxidant activity showed that increase in concentration of ZnO nanoparticles increases the radical scavenging activity. Anticancer activity with IC50 value as 65 μg/mL which conferred better cytotoxic effects of ZnO NPs on proliferation of A549 cell line. The present study revealed that the pharmacologically active compounds present in the green synthesized ZnO nanoparticles pave the way to lead its effective application in biomedical and nano-drug delivery systems.

Author Keywords
Antibacterial; Anticancer; Antioxidant; Green synthesis; Tecoma castanifolia; Zinc oxide nanoparticles

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93) Jamunarani, M.[a] , Vasanthanayaki, C.[b]

Shape adaptive DCT compression for high quality surveillance using wireless sensor networks
(2019) *Cluster Computing*, 22, pp. 3737-3747. Cited 3 times.

DOI: 10.1007/s10586-018-2249-1

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Abstract
Wireless surveillance networks consists of numerous camera and sensor node to transmit the surveillance details from a remote location to the user nodes. Large amount of information transmitted via the sensor nodes are non-priority information like the background which never changes throughout the surveillance time. This non priority information requires more space and is of no use in transmitting so this information can be compressed to the maximum level without affecting the quality of the image transmitted. For efficient transmission of the input data it is important that only Region of Interest (ROI) is transmitted with lower compression ratio and the non ROI regions to be compressed as much as possible. In this proposed work a shape adaptive DCT compression and Decompression scheme is proposed for efficient image data transmission over the wireless sensor networks. The frames from the surveillance sensor networks are acquired and the ROI is calculated using dynamic saliency maps. The image is then divided into two parts, the transmitting node performs the shape adaptive DCT on the image and transmits the image to the user node where the decompression is done using the inverse shape adaptive DCT. The performance of the proposed algorithm is tested on the set of video images and performance is tabulated for the quality of image and current consumption when the compressed image is transmitted by sender ENTDEV019 ESP 8266 WiFi MCU node and received by receiver ENTDEV019 ESP 8266 WiFi node.

Author Keywords
DCT (direct cosine transform); IDCT (inverse direct cosine transform); PSADCT (pseudo shape adaptive DCT); SA DCT (shape adaptive DCT)

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2-s2.0-85045056113

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

High resolution DPWM clustered architecture for digitally controlled DC–DC converter using FPGA
(2019) *Cluster Computing*, 22, pp. 4421-4430.

DOI: 10.1007/s10586-018-1990-9

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Abstract
Several researches have been done in literature to improve the resolution of pulse mode architectures used for controlling the DC–DC converters. Resolution can be measured as the number of bits used for representing the duty cycle control input [1]. Higher the resolution of control inputs more precisely the changes in output voltage with DC–DC converter can be addressed [2]. Traditional architectures implemented with counter and other delay line structure occupies large area and also has less throughput with an increase in number of control inputs. But the DC–DC converters used in portable and mobile based applications must be compact and consumes low power [3]. This proposed DPWM architecture uses Block RAM available in FPGA to store the binary bit patterns to derive variable duty cycle pulses [4]. The architecture is proposed for three different control inputs like four bit, three bit and two bit control inputs. This proposed architecture for a four bit control input can address 4096 bit patterns and has maximum operating clock frequency of 306.84 megahertz (MHz). © 2018, Springer Science+Business Media, LLC, part of Springer Nature.

Author Keywords
BRAM; DPWM; FPGA; Resolution; Switching converters

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95) Peer, M.S.[a] , Peer, M.N.[b]

Experimental investigation on engine characteristics fueled with waste HDPE oil and study on NO x emission variation using thermal imager
(2019) *Environmental Science and Pollution Research*, 26 (4), pp. 3436-3446. Cited 12 times.

DOI: 10.1007/s11356-018-3830-0

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Abstract
For heavy duty applications like power generation and transportation, the best option is the compression ignition engines, but the major concerns are the rising prices and environmental issues due to the rapid depleting sources of conventional fossil fuels. The present investigation is to study the performance and emission characteristics of a single cylinder four-stroke, air-cooled direct injection diesel engine runs with an alternate fuel as waste high density polyethylene plastic oil (HDPE) obtained by catalytic pyrolysis. At constant speed, test fuels have been experimented successfully to determine the engine performance such as brake thermal efficiency, brake specific energy consumption, and exhaust gas emissions such as carbon monoxide, carbon dioxide, oxides of nitrogen, and unburned hydrocarbons. The result shows that the brake thermal efficiency is lower at all load conditions when compared to diesel fuel whereas the brake specific energy consumption decreases with increase in engine load and increases with increase in waste plastic oil blend ratio. CO emission increases and NO x emission level decreases with enhancement in engine load whereas the NO x emission and CO emission augments with increase in waste plastic oil blend percentage. But in case of NO x emission increase in concentration of waste plastic oil with diesel leads to raise in emission level. By using thermal imager, the link between in-cylinder temperature and NO x emission has been fixed. With the help of this course of action, it has been observed that in-cylinder temperature plays the major role in NO x concentration. © 2018, Springer-Verlag GmbH Germany, part of Springer Nature.

Author Keywords
Diesel engine; Emission; Performance; Thermal imager; Waste plastic oil

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96) Manikandan, V.[a] , Kim, J.-H.[b] , Mirzaei, A.[c d] , Kim, S.S.[b] , Vigneselvan, S.[f] , Singh, M.[e] , Chandrasekaran, J.[g]

Effect of temperature on gas sensing properties of lithium (Li) substituted (NiFe2O4) nickel ferrite thin film
(2019) *Journal of Molecular Structure*, 1177, pp. 485-490. Cited 21 times.

DOI: 10.1016/j.molstruc.2018.09.085

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Abstract
In particular, less attention has been paid to lithium substituted nickel ferrite thin films for gas sensing studies. In this work, lithium substituted nickel ferrite thin film was prepared by chemical co-precipitation method. The Rietveld refinement X-ray diffraction (XRD) analysis provides all reflection planes of lithium substituted nickel ferrite thin film and reveals well formation. Scanning electron microscopy (SEM) reports the surface of thin film has needle structure particles and X-ray photoelectron spectroscopy (XPS) depicts the presence of all necessary elements. Brunauer-Emmett-Teller (BET) analysis provides adsorption and desorption rate of sensor film. UV–Vis absorption spectroscopy shows that the film has absorption peak which is in visible region. Transmission electron microscopy (TEM) presents rod structure nanoparticles with huge space and confirms the formation of lithium substituted nickel ferrite thin film from selected area electron diffraction (SAED) pattern. Hydrogen gas sensing tests shows that the optimal sensing temperature was 200 °C and sensor produces 95% reproducibility. © 2018 Elsevier B.V.

Author Keywords
Ferrites; Hydrogen gas; Surface morphology; Thin film

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97) Nataraj, M., Balaji, G.

Study on performance of wind mill by adding winglet in turbine blade: Virtual analysis
(2019) *Journal of Scientific and Industrial Research*, 78 (2), pp. 96-101. Cited 3 times.

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

Abstract
This research paper discusses the performance evaluation of wind mill by attaching winglet in turbine blade. Five winglet parameters namely winglet height, curvature radius, cant angle, sweep angle and twist angle are considered in this analysis, to get hold of how these parameters have influenced on lift coefficient and drag coefficient. Fifteen combinations of winglet model were modeled in Solid works and virtual analyses were carried out to identify the best winglet model that yield higher power output in the wind mill. Aerodynamic analysis was also carried out to study the performance of winglet at the tip of the rotor blade to account for the fluid forces with blades comprising different winglet configurations. The numerical investigation revealed that by adding a winglet to the base line turbine blade increases the co-efficient of lift by 2.3% resulting 2% to 3% rise in power output, and the reductions in vortex formation at tip of the blade in the total drag by 10.4%. From the analysis results, it is found that the sweep angle, cant angle and twist angle have influenced the windmill performance to extent of 2% increase, the coefficient of lift and 6% decrease in the coefficient of drag. © 2020 Phcogj.Com.

Author Keywords
Drag co-efficient; Lift co-efficient; Turbine blade; Wind mill; Winglet

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98) Mohanakavitha, T.[a] , Divahar, R.[b] , Meenambal, T.[b] , Shankar, K.[c] , Rawat, V.S.[b] , Haile, T.D.[b] , Gadafa, C.[b]

Dataset on the assessment of water quality of surface water in Kalingarayan Canal for heavy metal pollution, Tamil Nadu
(2019) *Data in Brief*, 22, pp. 878-884. Cited 42 times.

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Abstract
This data article aimed to investigate the quality of surface water in Kalingarayan Canal for heavy metal pollution, Tamil Nadu. Eight heavy metals like Fe, Cu, Mn, Cr, Zn, Cd, Pb, and Ni were analyzed in the water, for a period of three years, spanning the time frame between January 2014 to December 2016. Eight stations were selected along the Kalingarayan Canal, and water samples were collected on a monthly basis from these stations. The pH of the samples was in the alkaline state (6.88–8.90), whereas conductance was in the range of 394–4276 μs/cm. The average concentration of heavy metals in the surface water ranges from 0.040 to 10.75, 0.030 to 0.890, 0.02 to 0.91, 0.00 to 1.96, 0.00 to 0.01, 0.00 to 0.053, 0.01 to 0.12 and 0.110 to 3.40 mg/L for the metals Fe, Mn, Zn, Cu, Cd, Ni, Pb and Cr respectively. The dominance of various heavy metals in the surface water follows the sequence: Fe > Cr > Cu > Zn > Mn > Pb > Ni > Cd respectively. The canal is affected by anthropogenic activities and industrialization in terms of heavy metals. © 2019

Author Keywords
Anthropogenic activities; Heavy metals; Surface water; Water-quality

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

Lateral-torsional buckling capacity of Hybrid Double-I-Box Beams: A numerical approach
(2019) *Advances in Structural Engineering*, 22 (3), pp. 641-655. Cited 7 times.

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Abstract
In this article, a parametric study on the lateral-torsional buckling performance of thin-walled cold-formed steel Hybrid Double-I-Box Beams through numerical analyses has been presented. These built-up beams have distinctive cross-section geometry; the presence of more section modulus at the flanges provides high resistance to flexural bending and the closed-box portion offers high stiffness to resist torsion and lateral buckling. Therefore, these beams can be used for longer spans. The nonlinear finite element analysis was performed using ABAQUS software. All the beams were modelled as ideal finite element models adopting simply supported boundary conditions and loads were applied as end moments. To acquire a large number of data, three varying parameters were considered namely, hybrid parameter ratio, that is, yield strength of flange steel to web steel (1.0, 1.3, 1.5 and 1.7); ratio of breadth to depth of the beam (4/6, 5/6, 6/6 and 7/6); and length of the beam (1.0, 2.5, 5.0, 10, 15, 20, 30, 40, 50 and 60 in m). The thickness of both the flanges and the webs were 2.5 mm. All these parameters alter the overall slenderness of the members. It is shown that at larger spans, Hybrid Double-I-Box

Beams experience lateral buckling. The results obtained from the numerical studies were plotted on nondimensional moment versus nondimensional slenderness graph. These results were compared with the predictions using effective width method design rules specified in Euro codes EN 3-1-3 and buckling curve-d of EN 3-1-1, which was originally adopted lateral-torsional buckling capacities of hot-rolled steel 'I' sections, and the adequacy is checked. It was found that Hybrid Double-I-Box Beams has higher lateral-torsional buckling capacity than common 'I' or box sections. Hence, a new simplified design equation was proposed for determining lateral-torsional buckling capacity of Hybrid Double-I-Box Beams. © The Author(s) 2018.

Author Keywords
effective width method; flexural bending; ideal finite element models; lateral-torsional buckling; nondimensional moment; nondimensional slenderness

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100) Ranjit Kumar, M.[a] , Meenambal, T.[a] , Kumar, V.[b]

Abstraction, ensemble, and disaggregation approaches to estimate evapotranspiration for use in hydrologic models
(2019) *Simulation*, 95 (2), pp. 99-116. Cited 1 time.

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[b] Agricultural Engineering, Agricultural College and Research Institute, Tamil Nadu Agricultural University, India

Abstract
Evapotranspiration (ET) is the most dominant hydrologic process in water balance, yet it is difficult to measure in a watershed. This feature of ET has resulted in the development of many ET equations to estimate ET indirectly. While developing the Watershed Processes Simulation (WAPROS) model, the need for incorporating a good ET procedure is keenly felt, as the main objective is to simulate water balance of the watershed. Among many alternatives, ensemble estimate procedure is selected, for which six ET equations have been chosen. As the input data requirement for ET equations are highly demanding, the ET equations have been modified to dispense with some unimportant data, retaining the validity of the estimate. The details of selected ET equations and the method of ensemble are discussed. The method of disaggregation of potential ET into potential evaporation and potential transpiration has been discussed. As the WAPROS model has been planned as an hourly simulation model, the method of disaggregation of daily ET data into hourly ET data also assumed more importance. In this model, hourly distribution of potential values has been disaggregated into 24 hours for evaporation and 12 hours (daylight) for transpiration. As measured data for actual ET are not available, simulated ET data cannot be compared directly. It requires comprehensive sensitivity analysis of ET equations and estimate of the ensemble method. The sensitivities of ET and hydrologic processes to changes in air temperature are also incorporated. New metrics to aid in sensitivity analysis have been introduced to capture the quantum of changes. © The Author(s) 2018.

Author Keywords
disaggregation; ensemble approach; evaporation; Evapotranspiration; model abstraction; sensitivity analysis; transpiration

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101) Tamilalagan, A.[a] , Singaram, J.[b]

Oxidation stability of yeast biodiesel using Rancimat analysis: validation using infrared spectroscopy and gas chromatography–mass spectrometry
(2019) *Environmental Science and Pollution Research*, 26 (3), pp. 3075-3090. Cited 8 times.

DOI: 10.1007/s11356-018-3619-1

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Abstract
Biodiesel and single cell oils obtained from oleaginous yeasts grown in industrial waste are attractive alternatives to the conventional fuels. However, there are only few articles dealing with the stability of the microbial biofuels. Hence, this study aimed at characterizing the storage time of biodiesels using Rancimat methods. The microbial oil and the biodiesel obtained from microbial oil have been characterized with storage stability due to various oxidizing and thermal damage. Here, the microbial fuels were subject to Rancimat analysis and found to have high thermal-oxidative stability of 18 and 8.78 h for biodiesel and oil, respectively. The storage stability resulting from storage conditions was extrapolated for biodiesel and oil and has been found to be 1.62 and 0.54 years, respectively. The infrared spectroscopic analysis reveals the degree of oxidation found after the induction time was reached and shows the characteristic peaks for degradation products. Gas chromatography revealed the compounds that were responsible for the stability as well as the amount of degradation products left. © 2018, Springer-Verlag GmbH Germany, part of Springer Nature.

Author Keywords
Fourier-transform infrared spectroscopy; Gas chromatography–mass spectrometry; Induction time; Microbial biodiesel; Storage stability; Thermal oxidative stability

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102) Victoire, A.A.T.[a] , Gobu, B.[b] , Jaikumar, S.[b] , Arulmozhi, N.[c] , Kanimozhi, P.[d] , Victoire, A.T.[e]

Two-Stage Machine Learning Framework for Simultaneous Forecasting of Price-Load in the Smart Grid
(2019) *Proceedings - 17th IEEE International Conference on Machine Learning and Applications, ICMLA 2018*, art. no. 8614201, pp. 1081-1086. Cited 6 times.

DOI: 10.1109/ICMLA.2018.00176

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Abstract
In this paper, the electricity load and price patterns of consumers are forecasted using a two-stage forecasting framework. The electricity usage statistics of the consumers are recorded through smart meters and based on the historical load and price patterns the proposed model forecasts the future loads and prices used for further bidding purposes. A hybrid two stage forecasting framework combining the variational mode decomposition (VMD) method, echo state neural network (ESNN) and differential evolution (DE) algorithm is proposed. The training of the hybrid forecasting framework is done by decomposing the load and price time-series data using the VMD. The decomposed data are then used for training the ESNN. Differential evolution algorithm is used to tune the ESNN. Initially, the price and load data are used separately to train the ESNN, and in the second stage, both the data are used along with the forecasted output of the previous stage are used to train the ESNN. The proposed forecasting framework is experimented on 3 smart gird data derived from Smart Meter Energy Consumption Data in London Households of UK Power Networks (UKPN), for demonstration purpose. © 2018 IEEE.

Author Keywords
Differential evolution; Echo state neural network; Smart grid; Variational mode decomposition

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103) Dharmarajan, R., Ramachandran, R.

ESTIMATION OF PV MODULE PARAMETERS USING GENERALIZED HOPFIELD NEURAL NETWORK
(2019) *International Research Journal of Multidisciplinary Technovation*, 1 (3), pp. 16-27. Cited 1 time.

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Abstract
The estimation of solar photovoltaic (PV) system with help of electrical model parameters, such as photon generated current, the diode saturation current, series resistance, shunt resistance, and diode ideality factor, are desirable to predict the real performance characteristics of solar PV under varying environmental conditions. Finally, performance indices, such as PV characteristics curve are estimated for the various solar PV panels using GHNN optimization technique. © 2019, Asian Research Association. All rights reserved.

Author Keywords
Generalized Hopfield Neural Network (GHNN); Photovoltaic (PV)

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104) Senophiyah-Mary, J.[a] , Loganath, R.[b] , Omanakuttan, P.[c] , Premachandran, S.[c] , Nalini, K.[d]

A Case Study on the Implementing Challenges of the E-waste Rules Collection Centre's Perspective in Coimbatore Region
(2019) *Sustainable Waste Management: Policies and Case Studies: 7th IconSWM—ISWMAW 2017: Volume 1*, pp. 499-506.

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Abstract
Eight lakh tons of e-waste which have been generated in India play a significant role in the resource recovery which needs a serious attention in its collection, segregation and treatment for the environmentally sound management and disposal of e-waste. The initial step lies in the hands of consumers and bulk consumers. As per the e-waste rules, the e-waste generated should be transferred either to the producers in the name of extended producer responsibility (EPR) or it should be given to the collection centres in order to recycle it efficiently. The collection centres should follow the rules given by the Central Pollution Control Board (CPCB). From the earlier in-depth literature study, in Coimbatore region, collection centres were in need of transferring the e-waste generated to the recyclers. But there are various problems for the collection centres to prosper in it. An attempt has been made to find out the difficulties of the collection of e-waste from the consumers and bulk consumers, and various difficulties faced in transferring the e-waste to the authorised recyclers. © Springer Nature Singapore Pte Ltd. 2020.

Author Keywords
Collection centre; E-waste rules; Extended producer responsibility; Recyclers; Recycling of e-waste

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105) Yaazhmozhi, K.[a] , Senophiyah-Mary, J.[a] , Loganath, R.[b] , Balaji, R.[a] , Dhivya Priya, N.[a] , Nalini, K.[c] , Ghosh S, S.K.[d]

A Detailed Assessment on the Flow of Mobile Phones as E-Waste in Coimbatore District
(2019) *Sustainable Waste Management: Policies and Case Studies: 7th IconSWM—ISWMAW 2017: Volume 1*, pp. 441-452. Cited 1 time.

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Abstract
The advancements in technology development have paved a way for the innovations in telecommunication field. The telephones had been recreated into pagers and then into mobile phones which reduced the size and increased the portability. This increased the obsolescence rate due to the planned obsolescence of the manufacturers. e-waste or the electronic waste has been the talk for the past decade due to their increased generation rate. Though various regulations have been passed in the year 2012 and 2016 for controlling the generation of e-waste nothing persist to the extent. The mushrooming mobile industries are the major criteria for the higher generation of e-waste. A study has been done to find out the flow of mobile phones which would become an e-waste in near future. Questionnaires have been designed and distributed to the reputed dealers/retailers and the list of authorised mobile brands was accounted. From the study, only 40% of the mobile brands prevalent in the city were authorised which includes the fast-moving brands like Oppo, Vivo and Xiaomi. The study revealed that many mobiles that have been sold during the great sale days have not been authorised which increases the e-waste generation (orphaned e-waste) and so stringent rules should be made in accordance with the authorisation of retailing mobile phones. This could help create awareness on the extended producer responsibility where the dealers/retailers would play a major part in reducing e-waste generation. © Springer Nature Singapore Pte Ltd. 2020.

Author Keywords
Coimbatore; E-waste; Inventory; Mobile phones; Questionnaire

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106) Priyanka, R., Shanmugalakshmi, R.

Integrated Dual Output Converter with Low Electric Stress on Components
(2019) *International Research Journal of Multidisciplinary Technovation*, 1 (5), pp. 17-25. Cited 1 time.

DOI: 10.34256/irjmt1953

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Abstract
In recent days there is a vast development in the field of power electronic converters. Necessity of multiple level of voltage demand is raised for single supply system. To meet different level of load demand single input and multiple output topologies (SIMO) are created. There are many such converters fall under SIMO converters. The Integrated Dual Output Converter (IDOC) is one among them. The IDOC is a DC-DC converter that performs boost and buck operations simultaneously with a single input. It is basically evolved from boost converter, replacing a single switch by couple of switches. Both the switches are connected in series not only to perform both buck and boost operation but also to provide continuous input current. Main advantage of IDOC over conventional boost and buck converter is the reduced number of switches. Comparisons among another six buck-boost converters and the proposed IDOC converter are presented. It is found that the proposed converter's voltage gain is smaller than the other converters' in step-down mode. Also, based upon the comparisons among the same kind and same number of components, the voltage and current stresses on the power switch of the proposed IDOC converter are less than or equal to those of the comparative converters, and the voltage stress on the charge pump capacitor and the switching device power rating of the proposed IDOC converter are always lower than

those of other comparative converters. These advantages make component selection for the proposed converter much easier, and it can be used for industrial application. In order to check the behavior of the converter simulation is carried out in a MATLAB/SIMULINK. The simulation results validated the operation of the converter.

Author Keywords
Conventional Boost converter; conventional buck converter; Integrated Dual Output Converter (IDOC); Single Input Multi Output converter (SIMO)

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107) Bagavathi, C., Saraniya, O.

Evolutionary Mapping Techniques for Systolic Computing System
(2019) *Deep Learning and Parallel Computing Environment for Bioengineering Systems*, pp. 207-223. Cited 8 times.

DOI: 10.1016/B978-0-12-816718-2.00020-8

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Abstract
Systolic arrays are hardware structures built for fast and efficient operation of regular algorithms that perform the same task with different data at different time instants. Systolic arrays replace a pipeline structure with an array of processing elements that can be programmed to perform a common operation. Regularity, reconfigurability and scalability are some of the features of systolic design. Systolic architectures offer the competence to uphold the high-throughput capacity requirement. Multi-dimensional image processing algorithms, video streaming, nonlinear optimization problems and decision based algorithms are a few of many algorithms that are computationally demanding and can be benefited by implementing systolic arrays. To satisfy a highly held comparison parameter of computational efficiency, there exists a bottleneck of memory hierarchy. It is undeniable that hardware and software have to go hand in hand to remove the bottleneck and achieve better performance. Any regular algorithm such as matrix multiplication can be implemented in systolic architecture through mapping hardware computations to a space time transformation using a dependence graph. Systolic design methodology maps an N-dimensional dependence graph to a lower-dimensional systolic architecture using a transformation. Mapping is a process of assigning each point in iteration space a scheduled processing element for the operation at discrete time. Mapping can be done heuristically with high cost in accuracy and design time. Evolutionary algorithms act as an alternative solution for efficient search for mapping solutions. The evolutionary algorithms belong to non-traditional techniques which mimic the biological behavior of organisms to obtain the solution. They duplicate the nature of species evolution, group of ants, swarm of birds, school of fishes, groups of frogs, etc. The decision of choosing an evolutionary algorithm for the mapping process is based on its swift learning capabilities and less computation time compared to traditional random, exhaustive search procedures. Evolutionary algorithms start with a population of possible solutions and, through biological operators such as crossover, mutation, evolution based on social behavior and personal experience, the algorithm moves to a better solution. Differential evolution, bacterial foraging optimization, bees algorithm, genetic algorithm, particle swarm optimization, memetic algorithm, ant colony optimization, and shuffled frog leaping algorithm are some of the evolutionary algorithms, and a few of the listed processes are discussed in this chapter. This discussion is an accolade for an architecture that has been developed for the main reason of improving the hardware utilization efficiency, cost effectiveness and performance of iterative algorithms. Grey tone difference matrix generation in texture analysis [1] is taken as an example to prove the efficiency of systolic arrays that are mapped with evolutionary algorithms. Parameters for comparing the efficiency of the algorithms are the number of iterations for which there has been no improvement in the cost function, mapping matrices, average value of the cost function and processing time in achieving the desired result.

Author Keywords
Bio-inspired computing; Evolutionary algorithms; Optimization; Swarm intelligence; Systolic arrays; Texture analysis

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2-s2.0-85139240645

108) Thiriburasundari, V., Shanmugalakshmi, R.

IDENTIFICATION OF POWER SYSTEM DISTURBANCES USING WAVELET TRANSFORM
(2019) *International Research Journal of Multidisciplinary Technovation*, 1 (3), pp. 65-72. Cited 1 time.

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Abstract
Electrical power system consists of three main structures which are generation, transmission and distribution system. If any disturbances occur in the system, it will affect the normal operating condition of the system. When a short circuit fault occurs in the system, the high fault current is produced and it will affect the overall reliability, power quality, protective devices in the system. In renewable integrated system, the fault will affect the overall interconnected system. Therefore fault identification plays a major role in power system.The objective is to identify the fault occurs in the system using wavelet.The fault identification requires fast and accurate analysis. The tripping action depends mainly on the voltage and current waveforms during the fault. Wavelet transform(WT) is a mathematical tool used for the analysis of the current waveform during faulty condition. The symmetrical and unsymmetrical faults are created and the fault current in the system is given to the wavelet transform. Energy values are extracted from wavelet transform and it used to identify the fault. The proposed methodology is verified by using MATLAB/simulink model.

Author Keywords
symmetrical fault; unsymmetrical fault; wavelet transform(wt)

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109) Sugumar, D.[a] , Vanathi, P.T.[b] , Gao, X.-Z.[c] , Ott, F.E.[d] , Vallavi, M.S.A.[e]

Independent Vector Analysis of Non-Negative Image Mixture Model for Clinical Image Separation
(2019) *Advances in Computerized Analysis in Clinical and Medical Imaging*, pp. 17-39. Cited 1 time.

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Abstract
Chest X-Ray (CXR) plays a significant role in the investigative imaging schemes for diagnosing chest diseases such as lung cancer, tuberculosis, pneumonia, and asthma. The lung nodules are overlaid with ribs in CXRs. Hence, lung nodules and bony structures need to be separated to increase the perceptibility of the infected area and analysis of chest diseases without much trouble. The purpose of this chapter is to separate hard bony structures and soft lung tissue in CXRs. To separate blindly the mixed source, independent component analysis is used for one-dimensional data, whereas independent vector analysis (IVA) is applied to multidimensional data. Therefore, to achieve the separation of bone image and lung image in the CXR, two-dimensional IVA is presented. The performance of IVA is compared with other reported blind image separation (BIS) technique for standard images, dual-energy CXR images as well as conventional CXR images. The IVA algorithm for the separation of dual-energy CXR is better and dynamic.

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110) Vinodhini, M., Ameena Bibi, N.

Haze image restoration based on physical optics model using raspberry pi B+V1.2
(2019) *Materials Today: Proceedings*, 48, pp. 155-159.

DOI: 10.1016/j.matpr.2020.05.173

Department of Electronics and Communication Engineering, Government College of Technology, Tamil Nadu, Coimbatore, 641013, India

Abstract
Dehazing is still a challenging problem for the outdoor images. The occurrence of haze, fog, mist etc., reduce the visibility of captured images in the outdoor environment. There are several dehazing techniques proposed to resolve the haze in the outdoor images but the existing techniques suffers from the computational time complexity. For a real-time application time complexity plays a major role. As a part of real-time application haze removal is done using the raspberry pi b+v1.2. The hazy image is restored by taking dark channel with patch size of 11 × 11 to avoid the oversaturation of recovered scene radiance and halo effect. Getting the image size and channels, the image is flattened to get the top bright points. Then the image is padded at the ends with a square of side of the window to get the minimum comparision at the ends. Because the atmospheric light to be taken from the foreground as the background has almost same pixel values distributed. The intensity is found, from that maximum among these pixels are found and considered for atmospheric light. The transmission map is found, hazy image is restored. And the performance of modified approach is compared with paper perception oriented haze image restoration based on physical optics model. Hence, to give a better dehazing images with reduced computational time using raspberry pi b+v1.2. © 2019 Elsevier Ltd. All rights reserved.

Author Keywords
Atmospheric light; Dark channel; Raspberry pi; Scene restoration; Transmission map

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111) Sasikumar, A.[a] , Gopi, S.[a] , Sathish Kumar, M.[b] , Selvarajan, L.[c]

Predicting tensile strength of filler added friction stir welded AA6082 and AA5052 dissimilar joint
(2019) *Materials Today: Proceedings*, 46, pp. 9207-9211. Cited 1 time.

DOI: 10.1016/j.matpr.2020.01.258

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Abstract
Friction Stir Welding (FSW) process parameters and tool parameters are playing pivotal role in the weld joint characteristics. The combination is selected for the investigation of AA6082 and AA5052, which finds major application in ship structural frame and building constructions. Along with these usual parameters the composition of filler elements is considered in this work to improve the weld joint strength. The process parameters considered in this study are rotational speed, welding speed, shoulder penetration, filler holes center distance, and powder mixing ratio. The Central Composite Design (CCD), the most commonly used Response Surface Methodology (RSM) is considered to develop the prediction equation. A validation analysis is carried out and the results were compared with the relative impact of input parameters on tensile strength. The maximum tensile strength of fabricated joint was obtained with the process parameters combination of 1000 rpm rotational speed, 125 mm/min welding speed, 0.15 mm shoulder penetration, 2 mm filler holes center distance, and powder mixing ratio of 95% Mg and 5% Cr. © 2019 Elsevier Ltd.

Author Keywords
Aluminium alloy; Friction stir welding; Powder mixing ratio; Response surface methodology; Tensile strength

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112) Sathish Kumar, M.[a] , Gopi, S.[b] , Sivashanmugam, N.[c] , Sasikumar, A.[b]

A study on corrosion behavior of stainless steel dissimilar alloy weld joints (321 & 347)
(2019) *Materials Today: Proceedings*, 46, pp. 9229-9231. Cited 3 times.

DOI: 10.1016/j.matpr.2020.01.475

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Abstract
In this work dissimilar weld is obtained between SS 321 and SS 347 through robot guided MIG welding process. The Weldments are subjected to intergranular Corrosion test as per ASTM A262 and studied. Particularly considering the applications in wide range such as chemical storage, exhaust manifolds of automobiles and aircraft, where the surfaces are subjected to corrosive environment is taken for investigation. The specimens were welded with two different electrode wires ER 321 and ER 347. The results found that at 140A welding current and with ER347 there are no intergranular cracks and fissures found. The ER 347 is found to be the best suited electrode when compared to ER321 for welding these dissimilar joints. © 2019 Elsevier Ltd.

Author Keywords
Aerospace welding; Corrosion & robotic welding; MIG welding; SS 321; SS 347

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113) Dineshkumar, M.[a] , Shrikar, B.[a] , Kasimani, R.[b] , Ramanathan, A.[a]

Study on availability analysis, performance and emission behavior for an oxygen enriched turbocharged diesel engine
(2019) *Materials Today: Proceedings*, 46, pp. 9862-9868. Cited 3 times.

DOI: 10.1016/j.matpr.2020.12.104

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Abstract
There is an ever-increasing necessity for sustainable energy resources. The restrictions on diesel engines, which were already strict in the previous decade, are only going to increase in the next one. A zero-emission diesel engine has become an absolute necessity. Furthermore, it is critical to increase the thermal efficiency of these engines. Dimethyl Carbonate (DMC) is gaining popularity as an oxygenated additive to diesel due to its desirable boiling point and good solubility. The current work investigates the performance, emission and exergy parameters of a diesel engine with DMC as an additive. Additionally, we also explore the effects of oxygenation at the air side by introducing a turbocharger at the intake manifold. Four different blends of oxygenated additives were analysed with the turbocharger in operation. Here, a 5% blend of DMC produced the most desirable results. When a 5% blend of DMC with diesel was tried out, the brake thermal efficiency increased by 4 percent. At maximum brake mean pressure 4.8 bar, the maximum exergy efficiency was 65%. This blend also has least the brake specific fuel consumption and carbon monoxide emissions. These results emphasize the usage of DMC as an additive, and are of direct relevance to the alternative fuel industry - aiding it in making informed decisions about blending fuel additives. © 2019 Elsevier Ltd.

Author Keywords
Diesel engine; Dimethyl carbonate; Exergy; Injection pressure; Particulate emissions; Performance

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114) Maheswari, N.[a] , Nithya, R.[b] , Rafi Ahamed, S.[a] , Kalpana, S.[a]

Surfactant concentration influences the morphology and electrochemical properties of CuO Nanoparticles synthesized via microwave method
(2019) *Materials Today: Proceedings*, 45, pp. 4020-4025. Cited 2 times.

DOI: 10.1016/j.matpr.2020.10.751

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Abstract
Here, we detail the influence of the surfactant concentration on the morphological, structural and energy-storage property of CuO electrode material. When proposed as a supercapacitor material in neutral electrolyte (NaCl), it shows excellent electrochemical nature. Besides, it attains high specific capacitance (303F g-1 at 2 mVs-1), good rate performance (102F g-1 at 25 mVs-1) and good cyclic stability. In count, it has low charge transfer resistance (2.04 X), which is very essential when performing supercapacitive study at high current rates. These results are enhancing the study of CuO based electrodes for supercapacitor applications. Ó 2020 Elsevier Ltd. All rights reserved.

Author Keywords
CuO electrode Neutral electrolyte Supercapacitors Surfactant SDS

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115) Kumar, M.D.[a] , Palani, P.K.[b]

Characterization studies on weld strength of rotary friction welded austenitic stainless steel tubes
(2019) *Materials Today: Proceedings*, 41, pp. 1024-1029. Cited 6 times.

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Abstract
Austenitic stainless steel (SS304) tubes of outer diameter 19mm, 2mm thickness are joined together by rotary friction welding (RFW). The characterization studies are done by varying heating load, upset load, heating time, upset time and keeping constant spindle speed of 1100rpm. The tensile and microhardness test were conducted for each fabricated joints to evaluate the mechanical properties of welded samples. The joint strength increased with increase in upset load and heating load. The maximum joint strength of 780MPa and hardness of 210HV achieved for weld parameter of upset load 143MPa and upset time 4sec. The detailed fracture analysis reveals the weld sample joints had experienced a ductile mode of fracture at parent metal location. The microstructure analysis revealed coarse grain structure in the weld zone compared to base metal. © 2019 Elsevier Ltd. All rights reserved.

Author Keywords
Austenitic stainless steel; Friction welding; Mechanical properties; Tensile test; Tube welding

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116) Vijayakumar, B.[a] , Sivakumar, P.[b] , Ramesh, K.[c] , Choksi, H.[b] , Sakthisaravanan, A.[a] , Sircar, A.[b]

Sono-Chemical Biodiesel Production from Beef Processing Industrial Sludge in the Presence of nano-KF-Al2O3
(2019) *International Conference on Thermal Engineering*, 2019, . Cited 2 times.

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[b] School of Petroleum Technology, Pandit Deendayal Petroleum University, Gandhinagar, 382007, India
[c] Department of Mechanical Engineering, Government College of Technology, Coimbatore, 641013, India

Abstract
KF-Al2O3 nano-catalyst is prepared by a co-precipitation method and used in transesterification process. The process is assisted by ultrasonic irradiation to produce biodiesel from beef processing industrial sludge. The synthesized catalyst is characterized by SEM, XRD and FTIR. A maximum yield of 97% fatty acid methyl ester (biodiesel) is obtained under optimum conditions at 15:1 methanol to oil molar ratio with a catalytic loading of 6 wt% at 60 °C in 180 min. The reusability results showed that prepared nano-catalyst can be recycled up to seven times with minor loss in efficiency. This was mainly due to the enhancement of surface area of the catalyst and the activity of ultrasonic wave. The fuel quality of the biodiesel is analyzed as per ASTM standard and results are found to be in line with ASTM D6751.

Author Keywords
Biodiesel; Nano-catalyst; Optimization; Transesterification

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117) Selvarajan, L.[a] , Sasikumar, R.[b] , Mohan, D.G.[c] , Naveen Kumar, P.[d] , Muralidharan, V.[d]

Investigations on electrochemical machining (ECM) of Al7075 material using copper electrode for improving geometrical tolerance
(2019) *Materials Today: Proceedings*, 27, pp. 2708-2712. Cited 13 times.

DOI: 10.1016/j.matpr.2019.12.188

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Abstract
This research work focuses on electrochemical machining performance evaluation of Al7075 material ECM has become the most important and high precision technique in the manufacturing sector, since many intricate 3D profiles can be machined using a copper electrode. ECM process widely applied in aerospace industries using of multiple hole drilling, turbine blades within close limits and drilling jet engine turbine blades, etc. The objective of this experiment is found the maximum Material Removal Rate (MRR), reducing the machining time, good hardness and surface finish. The machining parameter considered were current (12 V), duty cycle (75%), and electrolyte concentration (32%). The performance measures such as metal removal rate (MRR), the machining time (min), hardness, form and orientation tolerance were examined. Main effect plot, interaction plot and contour plot analysis were used to optimize the process parameters for ECM processes. As a result, metal removal rate is maximized by increasing the electrolyte concentration (36 g/l), duty cycle (95%) and machining voltage (16 v). Metal hardness is improved by decreasing the machining voltage (12 V), duty cycle (75%) and increasing the electrolyte concentration (36 g/l). Minimum circularity is achieved at machining voltage, electrolyte concentration, and duty cycle are reduced. Minimum cylindricity is obtained while increasing the electrolyte concentration and decreasing the machining voltage. Minimum perpendicularity is achieved to increase of voltage and decrease of electrolyte concentration.

Author Keywords
Circularity; Cylindricity; ECM; Hardness; MRR; Perpendicularity

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118) Selvarajan, L.[a] , Rajavel, R.[b] , Prakash, B.[c] , Mohan, D.G.[d] , Gopi, S.[d]

Investigation on spark electrical discharge machining of Si3N4 based advanced conductive ceramic composites
(2019) *Materials Today: Proceedings*, 27, pp. 2174-2178. Cited 25 times.

DOI: 10.1016/j.matpr.2019.09.090

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Abstract
Ceramics are increasingly being used in aerospace, and have been used in the engineering industry for many years. Because ceramic is generally lighter than metal alloys, EDM has long been used for conductive ceramic materials for their forming complex shaped holes and design of all kinds of industrial applications. Furthermore, a considerable number of engineering challenges can be expected regarding the processing of ceramic materials on a percentage of composition level. In order to examine the investigation of the material removal mechanism and surface topography at a different processing temperature in the limit of high-temperature 1200-1600 °C of silicon nitride (Si3N4) based advanced ceramic composites (ACC) and analyzing various process parameters of spark EDM. Establish the relationship between the geometrical tolerances, crack behavior, Thermal spalling, pores and craters were investigated. Furthermore, the advantage, disadvantage, application, and productivity introduced conductive ceramic composites has been explored. In this work we reviewed the EDM characteristics of Si3N4-TiN and Nickel-Titanium alloys and also comparative analyses of the microstructure; hardness and composition of Electrical discharge machined surfaces were discussed. © 2019 Elsevier Ltd.

Author Keywords
ACC; Ceramic composites; EDM; Nickel-titanium alloys; Si3N4-TiN

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119) Pandian, S.[a] , Arumugamurthi, S.S.[b] , Sivanandi, P.[c] , Santra, M.[d] , Booramurthy, V.K.[b]

Application of heterogeneous acid catalyst derived from biomass for biodiesel process intensification: A comprehensive review
(2019) *Refining Biomass Residues for Sustainable Energy and Bioproducts: Technology, Advances, Life Cycle Assessment, and Economics*, pp. 87-109. Cited 12 times.

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Abstract
Hordes of viable methods to prepare catalysts from biomasses are available for enriching the quality and yield of biodiesel. The heterogeneous acid catalysts are advantageous because of their reactivity toward low-valued feedstocks and reusability. The latest studies on biodiesel production using green catalytic processes promote the use of biomass-derived solid acid catalysts as a result of their low price and eco-friendly attribute, leading to a sustainable biodiesel production. This review focuses on the discussion of various heterogeneous acid catalysts derived from biomass with an added emphasis on polycyclic aromatic hydrocarbons containing sulfonic acid group. Their effects on acid site strength, porosity as well as surface hydrophobicity for biodiesel production have also been discussed in this chapter. The use of these biomass derived catalysts paves a greener route for biodiesel production. © 2020 Elsevier Inc. All rights reserved.

Author Keywords
Biodiesel; Esterification; Heterogeneous acid catalyst; Sulfonation; Transesterification

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120) Mohamed Nishath, P.[a] , Alwarsamy, T.[a] , Mohamed Shameer, P.[b]

Comparison of Strength in Dissimilar AA7204-5021 Using Friction Stir Welding by Varying Tool Pin Profile
(2019) *Materials Today: Proceedings*, 22, pp. 1829-1837. Cited 1 time.

DOI: 10.1016/j.matpr.2020.03.017

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Abstract
Friction Stir Welding (FSW) of AA7204-5021 was performed with three different types of tool pin profile to analyze the strength of the materials. The fabricated welded materials undergone hardness testing for hardness of the material whereas tensile testing to identify the ductility of the work piece for the tool pin profile. By keeping the welding parameters like welding speed, traverse speed and tool rotational speed constant the work is performed for one tool profile. Furthermore investigation for the remaining two tool pin profile is performed for the selection of best tool pin profile. In this investigation the welding parameters are kept as high as possible for better results. By analyzing the stress strain ratio graphical results the better tool pin profile is selected for fixed parameters in the butt welded materials © 2019 Elsevier Ltd.

Author Keywords
AA7204-5021; Butt joints; Friction stir welding; Hardness test; Tensile test; Thermal imaging

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121) Mohamed Nishath, P.[a] , Sekar, K.[b]

Boulevard for Effective Consumption of Power and Energy in Friction Stir Welding
(2019) *Materials Today: Proceedings*, 22, pp. 1489-1498. Cited 2 times.

DOI: 10.1016/j.matpr.2020.02.066

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Abstract
The research work performed using AA7204-5022 material is to create a welding pathway for Friction Stir Welding process with low energy and power utilization along with good quality welds. The mentioned objective has been obtained by varying the welding parameters as welding speed and spindle speed. From this study, it has been recorded that the energy and power utilization can be précised by varying the temperature in the work piece as well as in the weld roots. By analyzing the power available in the mechanical process and also in the external source, the energy and power utilization analysis has been performed. An additional procedure handled for the judgment of good quality welding is the tensile test by analyzing the failures in the weld cross section. With the help of the results obtained during the respective welding operations a pathway for the low energy and power consumption with the high weld quality has been obtained. The result portrays that spindle speed and weld speed plays a significant role in energy and power consumption. At lowest spindle and weld speed, the power utilization is minimized, whereas the energy utilization is reduced at higher spindle speed. Hence it has been found that the minimized power and energy utilization steering at opposite direction in the map of welding parameters. Power consumption augments at both higher weld and spindle speed; meanwhile the significant governing factor for energy utilization is the weld speed. Hence at increased weld speed, the energy consumption could be decreased leading to reduced cost and also increased productivity. Spindle speed and partial penetration restricts the minimization of energy utilization at higher weld speed. But the major thing needed is the high quality welding. For this purpose increasing the welding speed is the only way to obtain good quality welding © 2019 Elsevier Ltd.

Author Keywords
CNC; Energy Consumption; Friction Stir Welding; Machine process; Power Consumption

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122) Mohamed Nishath, P.[a] , Sekar, K.[b]

Comparative Analysis of Friction Stir Welded Joints using Water run and Air stream cooling for Superior Strength
(2019) *Materials Today: Proceedings*, 22, pp. 1517-1523. Cited 3 times.

DOI: 10.1016/j.matpr.2020.02.069

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Abstract
The present study is focused mainly on the comparative analysis of mechanical properties and microstructure of nitrogen stainless steel using friction stir welding (FSW). Temperature max out is the major factor for quality welding and for this reason water run is used for cooling while welding nitrogen stainless steel and also air stream cooling is used for comparison of strength in the welding. It is found that by using water run cooling in the welding area, the heat affected zone shows superior density in dislocation and nugget zone shows a grain size which is in better-quality when compared to air stream cooling in the joints. In addition to the above tests immersion corrosion test is conducted to analyze how much wear the tool undergone during the welding process and it has observed better corrosion resistance for water run cooling © 2019 Elsevier Ltd.

Author Keywords
air stream; Friction stir welding; mechanical properties, immersion corrosion; microstructure; water run

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123) Syed Easa Faizal, M.[a] , Rajeswari, B.[b] , Ram Kumar, A.[a]

Experimental Investigation of Squeeze cast Aluminium 2024/Zn alloy using Taguchi method
(2019) *Materials Today: Proceedings*, 22, pp. 2412-2423. Cited 3 times.

DOI: 10.1016/j.matpr.2020.03.366

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Abstract
Casting is a manufacturing process where a metal is heated to a proper temperature and is then poured into a mold or cavity which contains it in the proper shape during solidification. In this experimental work investigation has been performed on Squeeze casting of Aluminium 2024 and Zinc alloy. The effect of squeeze casting parameters like different weight percentage of zinc and squeeze time has been investigated the relationship between tensile strength, micro-hardness and corrosion of the casted sample. Aluminium 2024 is taken as a base material and Zinc is taken as a alloy material. Different weight percentage of Zinc of 4% and 5% and Squeeze time of 10 min and 15 min are taken for the study. Taguchi L4 orthogonal array is employed for the experimental design. Finally, analysis of variance (ANOVA) is performed to know the impact of individual factors on tensile strength, hardness and corrosion resistance. It is observed that the weight percentage of zinc is the most influenced parameters. Multiple regression equation is formed for estimated predicted values of tensile strength, micro-hardness and corrosion resistance. As a conclusion, it has been derived that the weight percentage of zinc provide better hardness and corrosion resistance and squeeze time influence tensile strength of the samples for the given experimental conditions. © 2019 Elsevier Ltd.

Author Keywords
ANOVA; different weight percentage of zinc; Squeeze casting; squeeze time

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124) Sreeja, G., Saraniya, O.

Image Fusion Through Deep Convolutional Neural Network
(2019) *Deep Learning and Parallel Computing Environment for Bioengineering Systems*, pp. 37-52. Cited 13 times.

DOI: 10.1016/B978-0-12-816718-2.00010-5

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Abstract
Recent rapid deployment of imaging technologies and improvement of computational power allow us to process different data that are collected from various sensing modalities, employed in many applications of medical imaging, computer vision and remote sensing. A major gain of combining the outcomes of different modalities is to utilize the complementary information from each modality to form a better image. The method that predominantly combines images from multi-modalities in order to exalt the view of an image with upgraded complementary information is termed image fusion. With it, the multi-sensor data with complementary information about the particular region are comparatively analyzed. The new image formed by image fusion is suitable for image processing methods such as pattern or object recognition, segmentation, etc., and also for the purposes of human perception. The most essential issue in image fusion to be addressed is to define standard fusion rules for merging the multi-modal images. Current technologies aim at machine learning (ML) and deep learning (DL) for automatic image processing. The method of convolutional neural network (CNN) cannot be used directly to fuse multi-modal medical images. Various solutions have been demonstrated in the literature to make the best use of CNN for medical image fusion. This chapter presents a survey of image fusion algorithms based on deep convolutional neural network, and the results obtained by these methods are interpreted and discussed.

Author Keywords
CNN; DL; Feature extraction; Image fusion; Image registration; Multi-modal; Pyramid decomposition; Similarity learning

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2-s2.0-85084334916

125) Mohamed Shameer, P.[a] , Mohamed Nishath, P.[b]

Exploration and enhancement on fuel stability of biodiesel: A step forward in the track of global commercialization
(2019) *Advanced Biofuels: Applications, Technologies and Environmental Sustainability*, pp. 181-213. Cited 30 times.

DOI: 10.1016/B978-0-08-102791-2.00008-8

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Abstract
Studies concerning the use of renewable energy sources as the substitute for diesel fuel have been increasing due to the ever-increasing demand and diminishing supply of fossil fuels caused by rapid rate of industrialization and increasing vehicle population in the recent decades. To overcome these serious issues, biodiesel extracted from many feedstocks have been investigated and implemented for the past few decades. Biodiesel has been recommended as a vehicular fuel because its physicochemical properties are similar to diesel fuel. Due to the benefits like renewability, feasibility, availability, higher combustion efficiency, and lower emission, biodiesel has been suggested as the superior renewable source. Over the past few decades, nearly 350 species of biodiesel feedstocks have been explored and studied for performance, emission,

and combustion characteristics for diesel engines by many researchers. However, the commercial use of biodiesel in the global fuel market has been limited because of the main drawback of instability of fuel properties due to the deterioration of its quality when it is in contact with oxygen unlike petroleum diesel. Stability of fuel properties is chiefly significant to ensure the expected performance and life of the diesel engine. There are three types of stabilities like oxidation stability, storage stability, and thermal stability, playing chief roles in making the fuel quality stable. Antioxidants are often used to inhibit biodiesel oxidative degradation. Phenolic synthetic antioxidants are more efficient when compared to other antioxidants. This research investigates the effects of commercially available and cheap synthetic antioxidants (PY-pyrogallol, PG-propyl gallate, TBHQ-tert-butylhydroxyquinone, BHT-butylated hydroxytoluene, BHA-butylated hydroxyanisole) at various concentrations (375 ppm, 750 ppm, 1000 ppm, 1125 ppm, and 1500 ppm) on the fuel stability of Calophyllum inophyllum biodiesel.

Author Keywords
Antioxidants; Biodiesel; Fuel stability; Oxidation; Oxidation stability; Thermal stability

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2-s2.0-85084168526

126) Gajendran, C.[a] , Srinivasamoorthy, K.[b] , Thamarai, P.[c]

Intelligent prediction modeling of water quality using artificial neural networking: Nambiyar river basin, Tamil Nadu, India
(2019) *GIS and Geostatistical Techniques for Groundwater Science*, pp. 153-164. Cited 1 time.

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Abstract
An attempt has been made in the Nambiyar River Basin, Tamil Nadu, India, using neural network and geographical information system (GIS) techniques, to assess and predict groundwater-quality changes. Statistical analysis signifies the correlation between the major constituents. The intelligent predictive model (IPM) developed using artificial neural network (ANN) and GIS signifies the potential of an ANN prediction model to simulate and predict the hardness, total dissolved solids and chloride with acceptable accuracies. The findings of this study show, in comparison with a statistical model, the ability of ANN modelling in predicting the simulation of water-quality parameters in the study area is significant. It is also suggested that the present water-quality variations might have been mainly due to industrial effluents.

Author Keywords
ANN; Nambiyar basin; Regression; Statistics; Water quality

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2-s2.0-85082442404

127) Nataraj, M., Balaji, G.

Comprehensive analysis of different winglet models to enhance the windmill performance
(2019) *Journal of the Balkan Tribological Association*, 25 (3), pp. 718-729. Cited 1 time.

Government College of Technology, Coimbatore, Tamilnadu, India

Abstract

Renewable energy has become the leading resource as eco-friendly energy. The recent research on wind energy explores the opportunity of increasing the effectiveness of horizontal axis wind turbine and also reduction of lift-induced drag by adding winglets at the tip of the turbine blade. This paper describes the influence of different model winglets attached to wind mill turbine blade. The performance of winglets attached blades in wind turbine was investigated in ANSYS CFD to evaluate the power variation on low speed wind mill. This virtual investigation was conducted for three different winglets individually. The virtual analysis showed that the blended winglet was the best winglet compared to the other two turbine blades design. The numerical investigation revealed that adding a blended winglet to the base line turbine blade increased the output power by 4 watts resulting in overall increase in power by 2% to 3% output and power coefficient.

Author Keywords
Aerodynamics; CFD; Wind turbine; Winglet; Wingtip vortices

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128) Neelamegan, V.[a] , Nataraj, M.[b] , Mathew, Y.R.[c] , Anandanarayanan, R.[d]

Investigations on scavenging performance of a novel two stroke spark ignited free piston engine
(2019) *Journal of the Balkan Tribological Association*, 25 (3), pp. 617-632.

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Abstract
In this research work an attempt has been made to investigate the scavenging performance of a novel spark ignited two stroke free piston engine with spring system using three different spring materials as a rebound device. Free piston engines do not have a conventional crank shaft. The connecting rod of the free piston engine is fixed rigidly to the piston and the other end is attached to the spring. FPE with linear generator has been identified as novel technology for hybrid vehicle. The objective of the work is to analyze the scavenging performance to optimize important parameters namely geometry of spring and material of spring. 3D model of engine has been simulated for the combustion process to identify the scavenging efficiency by using spring pressure. Computational fluid dynamic analysis is carried out by varying the parameters to find out better scavenging efficiency in order to achieve fuel economy. The optimum of scavenging efficiency was seen for the free piston engine employed with chrome vanadium alloy steel spring.

Author Keywords
Computer simulation; Free piston engine; Rigidity modulus of materials; Scavenging; Spring materials

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2-s2.0-85081592495

129) Ramasamy, K.[a] , Srinivasan, P.S.S.[b] , Nataraj, M.[c] , Myures, M.[d]

Thin layer drying of sago (Tapioca pearls)
(2019) *Journal of the Balkan Tribological Association*, 25 (3), pp. 517-534.

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Abstract

In this study, an investigation of drying of Sago in a forced convection electrically heated hot air cabinet drying test device was done to ascertain the influence of temperatures of air at 60°C, 70°C, 80°C, and bed thicknesses of 7.0 mm, 10.5 mm and 14.0 mm for a constant velocity of air flow of 2.0 m/s to generate the experimental data. With the experimental data thus generated, a regression analysis was performed to fit with the twelve widely used mathematical models viz. Lewis, Page, Modified Page, Henderson and Pabis, Logarithmic, Two-term, Two-term exponential, Wang and Singh, Diffusion approximation, Modified Henderson and Pabis, Verma and Midilli models. These twelve thin layer drying models were compared with each other using statistical parameters such as coefficient of determination (r2), Root Mean Square Error (RMSE) and chi-square (χ2) to select the best model. Based on the results, Midilli model is considered as the most suitable model compared to others adequately describing drying kinetics of Tapioca pearls (Sago).

Author Keywords
Air heater; Drying; Mathematical modeling; Sago; Thin layer

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2-s2.0-85081551533

130) Parimala Murugaveni, S.[a] , Thyla, P.R.[b]

Assessing the performance of nano lubricant on zinc aluminium alloy
(2019) *Defence Science Journal*, 69 (4), pp. 396-401. Cited 1 time.

DOI: 10.14429/dsj.69.13313

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Abstract
In the field of tribology, Zinc Aluminium (ZA) alloys have been widely investigated for their superior wear characteristics. They were found to be suitable alternatives for bearing bronzes for the operating conditions of high mechanical load and moderate sliding speeds. Addition of nano-particles in the lubricating oil (base oil) to enhance the characteristics of the base oil is known as nano lubrication. In this study, sliding wear behaviour of ZA27 was investigated under dry, base oil and nano oil lubrication conditions, by varying load, sliding distance and sliding speed. With the base oil as SAE 40, nano graphite was added in two step method which was further used to identify the lubrication regime under different lubrication conditions. From the limited study of single melt samples, the results appear that the wear behaviour of ZA27 alloy improved under nano lubrication conditions with reduction in operating temperature. It could be observed from SEM images that the presence of nano-particles reduced scarring and wear, leading to enhancement in the tribological performance of ZA27 alloy.

Author Keywords
Nano-graphite; Nano-lubrication; Wear behaviour; ZA27

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131) Divahar, R.[a] , Aravind Raj, P.S.[a] , Sangeetha, S.P.[a] , Mohanakavitha, T.[b]

Impact of industrial wastewater disposal on surface water bodies in kalingarayan canal, Erode district
(2019) *Indian Journal of Ecology*, 46 (4), pp. 823-827. Cited 9 times.

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Abstract
The Kalingarayan canal is crossing the major textile town Erode which is abundantly occupied by textile units. Major

streams carrying the untreated / semi treated industrial effluents are mixed into the canal. However, the gradual introduction of a large number of new chemical compounds and the technologies has resulted in much higher number of contaminants. The original situation, which local intense pollution from a limited number of well-defined sources has been transferred into a situation with widespread contamination by a large variety of compounds from a multitude of sources. Continuous disposal of industrial effluents on canal, which has limited capacity to assimilate the pollution load, also leads to ground water pollution. Kalingarayan canal has helped to cultivate more than 6000 hectares but farmers are experiencing various problems. The area of cultivation is reduced to 3000 hectares because of the contamination in the canal by the different polluting industries like tanneries, textiles and dyeing units located in Erode and Tirupur taluk areas. The farmers and their cattle are affected by the pollution of the canal. Hence their yield on their lands has decreased to a certain extent. Thus, this study gives a clear picture of pollution source points, types of effluents added in the canal. The scope of the present study is to assess the impact on surface water of Kalingarayan canal, a comprehensive experimental study to identify the pollutant levels in the surface water of the Kalingarayan canal and to suggest a suitable remedial measure to handle this problem. The results of the analysis were correlated with the water quality standards of BIS. It shows that all the parameters studied are exceeding in the permissible limits. This is due to more discharge of industrial effluents into the canal and it should be regularly monitored and wastewater should be treated. This will control pollution and prevent the depletion of the quality of canal water.

Author Keywords
Dyers; Industrial effluents; Kalingarayan canal; Pollution; Sewage water; Tanners

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132) Arulraj, M.[a] , Palani, P.K.[b] , Sowrirajan, M.[a] , Vijayan, S.[a] , Davim, J.P.[c]

Optimization and effect of squeeze casting process parameters on tensile strength of hybrid metal matrix composite
(2019) *Journal of Manufacturing Technology Research*, 11 (3-4), pp. 137-154. Cited 8 times.

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Abstract
The squeeze casting process is leading liquid state method for casting metal matrix composite. This is accomplished economically through the conversion of mechanical energy into interface energy at the reinforcement-matrix interface zone. This experimental study focuses on processing of hybrid metal matrix (LM24-SiCp-coconut shell ash) composite to optimize and to analyze the effect of squeeze casting process parameters viz. reinforcement percentage, pouring temperature, squeeze pressure and mould temperature on the tensile strength of the composites. Experiments were conducted based on L27 (34) orthogonal array. Results revealed that squeeze pressure and reinforcement percentage were the most influencing process parameters on tensile strength. A mathematical model was developed for the prediction of tensile strength using nonlinear regression analysis and validated through confirmation experiments. Optimum parametric condition was obtained using Taguchi method and Genetic Algorithm tool, which could exhibit 25% improvement on tensile strength of the composite comparing conventional alloys.

Author Keywords
Coconut shell ash; Genetic algorithm; LM24 aluminium alloy; Metal matrix composite; Silicon carbide; Squeeze casting; Taguchi method

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133) Pauline, J.M.N.[a] , Achary, A.[b]

Novel media for lipid production of Chlorococcum oleofaciens: A RSM approach
(2019) *Acta Protozoologica*, 58 (1), pp. 31-41. Cited 3 times.

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Abstract
The algal medium was optimized to increase the biomass and lipid production of Chlorococcum oleofaciens. The significant variables were screened and chosen from previously reported algal culture media using Plackett Burman Design (PBD). Optimization of the significant variables were performed using central composite design. The Pareto chart for PBD revealed that the salts such as sodium bicarbonate, sodium nitrate, potassium nitrate and ferrous sulphate had enhanced the biomass and lipid production. The variables and its effect on the responses were further studied by central composite design (CCD). A new medium was formulated based on the response surface methodology. The predicted concentration of NaHCO3, NaNO3, KNO3, MgSO4. 7H2 O were found to be 6.75 g/L, 0.75 g/L, 1.88 g/L and 0.35 g/L respectively. The actual and the predicted total lipid yield for the optimized media was around 0.74 g/L and 0.78 g/L respectively. The optimal medium has been named as AM medium. Growth and the lipid yields of C. oleofaciens were found higher in AM medium. The specific growth rates of C. oleofaciens in AM and CFTRI media were found to be 0.14 day-1 and 0.19 day-1 respectively. The biomass produced by the optimized AM medium was found to be 2.7 times greater compared to the CFTRI medium. The lipid was extracted and GC-MS was performed which revealed that the fatty acids were predominantly of the class C15:0, C18:0, C16:0 and C12:0. It is concluded that besides lipid content, AM medium increased the cell number leading to the increase in biomass.

Author Keywords
AM medium; Biomass; Central composite design; Lipid; Medium optimization; Plackett Burman Design

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134) Sadheesh, S.[a] , Kumar, M.[b]

Ambient air quality monitoring and modelling in Coimbatore city
(2019) *Indian Journal of Environmental Protection*, 39 (6), pp. 524-530. Cited 4 times.

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Abstract
The atmosphere, which makes up the largest fraction of the biosphere, is a dynamic system that continuously absorbs a wide range of solids, liquids and gases from both natural and artificial sources. Therefore, the estimation of such gaseous air pollutants in the ambient air in the urban area of Coimbatore becomes important. In this study, it is proposed to perform the distribution of wind speed and direction at a particular location graphically using wind rose diagram. Sampling locations are selected based on vehicle density. The samples were collected and the concentrations of gaseous air pollutants were estimated, the results were compared with National Ambient Air Quality Standards (NAAQS). In addition to this, traffic survey was conducted in the selected locations to determine the density of vehicles. From the selected locations ambient air quality being monitored, from this monitoring data, artificial neural network (ANN) and CALINE-4 has to be created. Integrated sensor suite (ISS) was used to observe and record the meteorological parameters such as wind speed, wind direction, rainfall intensity, ambient temperature and relative humidity. ANN model has been used to predict the future air quality by giving the traffic as well as a meteorological parameter as an input. CALINE-4 model has been used to simulate the site specified dispersion of NOx along the roadways.

Author Keywords
Air quality index; Modelling software such as caline-4 and ann; Monitoring

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135) Gilbert, E.P.K.[a] , Baskaran, K.[b] , Rajsingh, E.B.[a] , Lydia, M.[c] , Immanuel Selvakumar, A.[c]

Trust aware nature inspired optimised routing in clustered wireless sensor networks
(2019) *International Journal of Bio-Inspired Computation*, 14 (2), pp. 103-113. Cited 24 times.

DOI: 10.1504/IJBIC.2019.101637

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Abstract
Wireless sensor networks (WSN) consist of sensor nodes which have capabilities of sensing, computation and communication. Routing algorithms are required in a WSN when a node is unable to send a data to the base station directly. In this paper, a trust aware optimised compressed sensing-based data aggregation and routing algorithm has been proposed for clustered WSN. Compressed sensing is used for data aggregation from sensor nodes with reduced overhead. Nature inspired optimisation has been implemented to obtain trade-off between transmission distance, hop-count, number of transmitted message and most trusted path using artificial bee colony algorithm, ant colony optimisation, differential evolution, firefly algorithm and particle swarm optimisation. Trust-based reconstruction of the compressed data is done at the base station in the presence of malicious nodes. © 2019 Inderscience Enterprises Ltd.

Author Keywords
ACO; Ant colony optimisation; Artificial bee colony algorithm; Differential evolution; Firefly algorithm; Multi-objective optimisation; Particle swarm optimisation; PSO; Routing; Trust management; Wireless sensor networks; WSN

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136) Jayanthi, S.[a] , Thalla, A.K.[b]

Producing oleaginous organisms using food waste: Challenges and outcomes
(2019) *Methods in Molecular Biology*, 1995, pp. 369-381. Cited 4 times.

DOI: 10.1007/978-1-4939-9484-7_21

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Abstract
With organic or food waste being one of the main constituents of the total urban waste generated, it not only makes it essential to seek means for its safe disposal but at the same time reiterates the huge potential that lies with the proper utilization of such a widely available resource. Oleaginous microbes that are effective in producing or storing oil would use food waste rich in carbohydrates, lipids, and proteins, and this oil in turn could be an alternative feedstock for the production of biofuels. However, there are few challenges in the process. The various challenges in this process and methods to address them are discussed in the present chapter. © Springer Science+Business Media, LLC, part of Springer Nature 2019.

Author Keywords
Biodiesel; Food waste; Lipids; Oleaginous

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137) Manivannan, T.S., Srinivasan, M.

A Novel Design Approach to Implement Multi-port Register Files Using Pulsed-Latches
(2019) *Communications in Computer and Information Science*, 892, pp. 521-537.

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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. To implement n READ/WRITE multi-ports in SRAM register file design, the transistors that forms READ/WRITE ports must be replicated n times. Thus, there exist a proportionality between the number of transistors required per cell and the number of READ/WRITE ports per cell. This relationship is completely eliminated in the proposed pulsed-latches based register file design. The proposed pulsed-latches requires only 10 transistors per cell for any number of READ/WRITE ports. The proposed pulsed-latches based multiport register files consumes low power, area efficient and performs multi-read and multi-write operations. Hence, to implement n READ/WRITE ports in pulsed-latches based register files, n individual non-overlapping pulses are required, thereby making the number of transistors required per cell to be unchanged. These register files showed significant decrease in area as well as power consumption when compared to the SRAM based register files. An 8-bit(1X8), 64-bit(8X8), 128-bit(16X8) and a 256-bit(32X8) 4-READ and 2-WRITE (4R2W) pulsed-latches based multiport register files were designed and simulated in cadence 180 nm technology.

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138) Ramyarani, N.[a] , Subbiah, V.[b] , Deepa, P.[c]

Design of area-efficient IIR filter using FPPE
(2019) *Turkish Journal of Electrical Engineering and Computer Sciences*, 27 (3), pp. 2321-2330. Cited 1 time.

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Abstract
Floating point arithmetic circuits provide wide dynamic range and high precision, and they are widely used in scientific computing and signal processing applications, but the complexity increases in hardware implementations of floating point units. In VLSI design architecture, many applications suffer in size of the components used in logical operations. The aim of reducing architecture is to gain reduction in power loss and also in area, but the reduction in size of the components leads to an increase in delay and memory. Hence, to overcome these limitations and to optimize the area, a novel design of floating point processing element (FPPE) architecture is proposed in this work with a smaller number of logical components and registers. A partially folded arithmetic function architecture is modeled for the design of an infinite impulse response (IIR) filter using FPPE and implemented on a field programmable gate array (FPGA) with efficient area. FPGAs are widely used in the implementation of floating point computing modules due to the increase in gate density and embedded arithmetic cores. Synthesis results prove that the proposed design of the IIR filter provides efficient area compared with existing works. The modules are designed in Verilog and implemented on Xilinx FPGAs.

Author Keywords
Field programmable gate arrays; Floating point arithmetic; Floating point processing element; IEEE 754-2008 standard; Infinite impulse response filters

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139) Prakash, R.[a] , Thenmozhi, R.[b] , Raman, S.N.[c]

Mechanical characterisation and flexural performance of eco-friendly concrete produced with fly ash as cement replacement and coconut shell coarse aggregate
(2019) *International Journal of Environment and Sustainable Development*, 18 (2), pp. 131-148. Cited 52 times.

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Abstract
The aim of this study is to investigate the effect of adding fly ash, an industrial by-product and coconut shell, an agricultural waste on the mechanical and flexural characteristics of eco-concrete. The study focuses on density, compressive strength, tensile strength and flexural behaviour of the coconut shell eco-concrete. Two different mixes are developed, one with coconut shell and the other with conventional aggregate and coconut shell as coarse aggregate. The cement content is replaced with class F fly ash at 0%, 10%, 20% and 30% by weight. The test result shows that the coconut shell concrete produced with 10% fly ash has recorded higher compressive, tensile strength than other proportions. Fly ash inclusion further reduces the density of coconut shell concrete. The higher deflection of coconut shell concrete before failure shows that it has failed in a ductile manner. The flexural behaviour is comparable with other lightweight concretes. It is suggested that an eco-friendly, cost effective structural lightweight concrete can be produced by using coconut shell and fly ash. © 2019 Inderscience Enterprises Ltd.

Author Keywords
Coconut shell aggregate; Compressive strength; Eco-concrete; Flexural behaviour; Fly ash; Split tensile strength

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140) Jayanthi Sree, S., Vasanthanayaki, C.

Ultrasound fetal image segmentation techniques: A review
(2019) *Current Medical Imaging Reviews*, 15 (1), pp. 52-60. Cited 7 times.

DOI: 10.2174/1573405613666170622115527

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Abstract
Background: This paper reviews segmentation techniques for 2D ultrasound fetal images. Fetal anatomy measurements derived from the segmentation results are used to monitor the growth of the fetus. Discussion: The segmentation of fetal ultrasound images is a difficult task due to inherent artifacts and degradation of image quality with gestational age. There are segmentation techniques for particular biological structures such as head, stomach, and femur. The whole fetal segmentation algorithms are only very few. Conclusion: This paper presents a review of these segmentation techniques and the metrics used to evaluate them are summarized. © 2019 Bentham Science Publishers.

Author Keywords
Anatomy; Biometric measurements; Femur length; Fetal; Quality metrics; Review; Segmentation; Ultrasound

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141) Narasimman, S.[a] , Harish Babu, K.[a] , Balakrishnan, L.[b] , Meher, S.R.[b] , Sivacoumar, R.[c] , Alex, Z.C.[c]

Fabrication of fiber optic based temperature sensor
(2019) *Materials Today: Proceedings*, 9, pp. 164-174. Cited 3 times.

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Abstract
The metal oxide semiconductors (ZnO, SnO2, Al2O3 and TiO2) were synthesized by co-precipitation method. The synthesized nanoparticles were characterized by X-ray diffraction (XRD), scanning electron microscope (SEM), energy dispersive spectrometer (EDS) and UV-Visible spectrometer in diffused reflectance (DR) mode. The XRD results stipulated that the ZnO nanoparticle is crystallized in hexagonal wurtzite structure, SnO2 nanoparticles in rutile tetragonal structure, Al2O3 nanoparticle in rombohedral structure and TiO2 nanoparticle in rutile anatase structure. The SEM investigation affirms that all the synthesized nanopowders are composed of uniformly distributed grains. The UV-Vis spectrum proclaimed that the synthesized nanoparticles having the band gap of 3.2 eV (ZnO), 3.3 eV (SnO2) and 3.5 eV (TiO2) respectively. The synthesized nanoparticles were replaced with small cladding region of the optical fiber and act as a temperature sensing materials. The temperature sensing characteristics of the synthesized nanoparticles were investigated for broad wavelength range (200-1000 nm). It reveals that the synthesized Al2O3 nanoparticles were given linear and high sensitivity (~27) at 697 nm compared with other sensing materials. Further, we have studied the wavelength dependent temperature sensing characteristics of Al2O3nanopowders and it show better sensitivity (~34) in blue wavelength region (450 nm-495 nm). Selection and/or Peer-review under responsibility of International Conference on Nanoscience and Nanotechnology (ICNAN'16)

Author Keywords
Fiber optic sensor; Metal oxide; Nanopowder; Temperature sensing

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142) Nataraj, M.[a] , Nagarajan, N.[b]

Effect of cutting tool nose radius on surface roughness by using response surface methodology
(2019) *Journal of the Balkan Tribological Association*, 25 (1), pp. 224-235. Cited 1 time.

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Abstract
The purpose of this experimental investigation was to analyze the effect of nose radius on surface roughness, in Computer Numerical Control (CNC) turning of EN31 alloy steel in wet condition. The tool geometry (nose radius) on surface roughness was studied and analyzed with the effect of cutting conditions such as speed, feed and depth of cut. Then, the Material Removal Rate (MRR) for the machining process was done by mathematical and analytical methods. Design of Experiments (DOE) was conducted for the analysis of the influence of the turning parameter on the surface roughness and Material Removal Rate by using Response Surface Methodology (RSM) and then followed by optimization of the results using Analysis of Variance (ANOVA) to minimize the surface roughness and to maximize the Material Removal Rate. While increasing the nose radius then the surface roughness value was decreased. Material Removal Rate was increased when decrease the surface roughness, the cutting speed values can be significant.

Author Keywords

Material removal rate; Nose radius; Surface roughness

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143) Glory Selvamano, J.[a] , Prince Arul Raj, G.[b] , Jeyanthi, J.[c]

Identification and control of saltwater intrusion by ADR approach in the coastal aquifers of Tuticorin, India
(2019) *Applied Ecology and Environmental Research*, 17 (2), pp. 2593-2617. Cited 3 times.

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Abstract
Due to industrial growth and urbanisation, excessive usage of groundwater resulted in a problem of saltwater intrusion in Tuticorin, India where control and management is very much essential. In the present study, groundwater samples are collected and analysed from 38 observation wells in years 2014 and 2018. Thirteen parameters namely pH, Electrical Conductivity (EC), Total Dissolved Solids (TDS), Total Hardness (TH), Calcium (Ca2+), Magnesium (Mg2+), Sodium (Na+) Potassium (K+), Bicarbonate (HCO3 -), Chloride (Cl-), Sulphate (SO4 2-) Nitrate (NO3 -) and Fluoride (F-) are determined and considered in calculating the Water Quality Index (WQI) based upon weighted arithmetic index method. Geographical information system (GIS) is used to interpolate water quality data by inverse distance weighted method. Experimental investigation indicates saltwater intrusion in the coastal aquifer of Tuticorin is due to excessive withdrawal of groundwater. Potential intrusion of saltwater is studied with respect to distance of observation wells from seashore. Finite Element Modelling of Flow (FEFLOW) is used to select the optimum pumping and recharge rate to control saltwater intrusion. A model is calibrated with hydraulic head measured using piezometer in the observation well, as well as salt concentration. The model is simulated using three different groundwater scenarios such as Abstraction, Recharge and combined Abstraction, Desalination Recharge (ADR) method. The simulation results depicted that the planned ADR system accomplishes significantly better than using abstraction or recharge well. © 2019, ALÖKI Kft., Budapest, Hungary.

Author Keywords
FEFLOW; GIS; Groundwater management; Hydraulic head; Water quality index

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144) Athena, J., Sumathy, V.

TBAC: Tree-based access control approach for secure access of PHR in cloud
(2019) *International Journal of Biomedical Engineering and Technology*, 29 (3), pp. 246-272. Cited 3 times.

DOI: 10.1504/IJBET.2019.097624

Department of ECE, Government College of Technology, Coimbatore, Tamil Nadu, 641013, India

Abstract
Personal Health Record (PHR) system is a currently emerging patient-oriented model for sharing the health information through a cloud environment. Previously, single attribute authority-based security scheme was used for sharing the PHRs in the cloud. But, this security scheme is not practically applicable due to the security and privacy issues. The existing access control approaches require more time to encrypt and decrypt the PHR file. This paper proposes a Tree-Based Access Control (TBAC) approach for fine-grained and secure access of the PHR in the cloud environment. In our approach, Tree-based Group Diffie-Hellman (TBGDH) algorithm is used to generate the key instance for the encryption process. The Attribute-based Encryption (ABE) approach is used with different hierarchical levels of the users to protect the personal health data. The access policies are based on the user attribute. Copyright © 2019 Inderscience Enterprises Ltd.

Author Keywords
ABE; Attribute-based encryption; Cloud computing; Diffie-Hellman; Key generation; MA-ABE; Multi-authority ABE; Personal health record; PHR; TBAC; TBGDH; Tree-based access control; Tree-based group Diffie-Hellman

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145) Somu Alias Ramya, M., Jeyapriya, S.P.

Behaviourial study on geopolymer column in soil
(2019) *Lecture Notes in Civil Engineering*, 14, pp. 1-9.

DOI: 10.1007/978-981-13-0559-7_1

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Abstract
Geopolymer soil column is one of the advancements in Ground improvement techniques. The study is aimed at the comparison of Geopolymer soil column and untreated sand in the load carrying capacity and settlement behavior of footing resting on loose sand. The effects of Geopolymer soil column and untreated sand are investigated by conducting experimental studies. The parameters involved in this study include soil column spacings and curing periods. A load test was carried out on a model footing resting on sand with Geopolymer soil column and untreated sand. Load test is repeated on the footing with Geopolymer soil column at varying curing periods of 7, 14, and 28 days. The load-settlement curve for different curing periods day were compared. It was observed that the Geopolymer soil column has high bearing capacity improvement factor compared to untreated sand. Settlement also considerably reduced while using Geopolymer soil column. A parametric study has been carried out to compare the settlement of Geopolymer soil column and untreated sand by finite element modelling using PLAXIS 2D Software and the results are agreeable with the experimental results. © Springer Nature Singapore Pte Ltd 2019.

Author Keywords
Bearing capacity; Column spacings; Curing periods; Geopolymer; Settlement

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146) Uma Maheswari, S.[a] , Vasanthanayaki, C.[b]

Enhanced techniques to secure medical image and data transit
(2019) *Lecture Notes in Computational Vision and Biomechanics*, 30, pp. 389-407.

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Abstract
This paper displays the work related to the secured medical picture transmission in light of watermarking and encryption. Client particular watermark is installed into the LSB of unique picture. Implanting watermark in LSB does not influence the nature of picture. This watermarked picture is then encoded by utilizing a pixel repositioning calculation. Every pixel is repositioned in light of the rest of after division by number 10. This leftover portion lattice goes about as encryption key and is required at the season of unscrambling as well. Comprehensive analyses are completed on proposed approach. The outcomes demonstrate that the watermark inserted is intangible and can be effectively separated at the recipient. Likewise, the encoded picture has no visual importance with the first picture and histogram of scrambled picture is changed. Encoded picture can be decoded with no loss of data from the picture. From this decoded picture watermark can be removed which endures no misfortune in the watermark. PSNR esteems for an arrangement of medicinal pictures are fulfilling. © Springer Nature Switzerland AG 2019.

Author Keywords
Digital Watermark; LSB; PSNR; Restorative imaging

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147) Venkatesh Kumar, P.[a] , Rajeswari, R.[b]

A recursive discrete Kalman filter for the generation of reference signal to UPQC with unbalanced and distorted supply conditions
(2019) *International Journal of Modelling, Identification and Control*, 31 (1), pp. 39-52. Cited 7 times.

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Abstract
This paper describes the development of a robust control technology adapting Kalman filter in order to attend to the problems that arise in power quality. This methodology makes use of a three-phase three-wire unified power quality conditioner (UPQC) under unbalanced and distorted supply conditions. In spite of harmonics and frequency oscillation, the Kalman filter determines the amplitude, phase angle and frequency of load currents and source voltages. The main ideas are to use Kalman filtering algorithm to acquire fundamental component of load current and source voltage and to use the least squares method which is relatively simple and faster. The proposed robust Kalman filter-based UPQC system mitigated the issues such as voltage sag, voltage swell, harmonics distortions (voltage and current), and unbalanced supply voltage and power factor. The results are justified using the MATLAB/Simulink software to support the Kalman filter-based control algorithm under steady state and dynamic operating conditions. Copyright © 2019 Inderscience Enterprises Ltd.

Author Keywords
Kalman filter; Phase locked loop; PLL; Power factor; SRF; Synchronous reference frame; THD; Unbalanced source; Unified power quality conditioner; UPQC

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

An inventory model for imperfect production system with rework and shortages
(2019) *International Journal of Operational Research*, 34 (1), pp. 66-84. Cited 16 times.

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Abstract
This paper considers a production inventory model with planned backorders for a single product. The product is manufactured in a single stage manufacturing system. The manufacturing system generates imperfect quality products. All these defective products are reworked in the same cycle. This paper develops two inventory models for two operational policies. The first policy covers the case that the rework is done and the shortages are not permitted. The second policy covers the case that the rework is done and the shortages are permitted. The generation of defective items during most practical production processes is almost inevitable. These imperfect quality items can sometimes be reworked and repaired, hence the overall production costs can be reduced significantly. To achieve this objective, a mathematical model is developed. In particular, the optimal production lot size which minimises the total cost is derived. This model is developed for deriving the necessary and sufficient conditions for having a unique solution. An illustrative example is provided and validated. The validation of result in this model was coded in Microsoft Visual Basic 6.0. © 2019 Inderscience Enterprises Ltd.

Author Keywords
cycle time; defective items; demand and production.; economic production quantity; EPQ; rework; shortages

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149) Naveena Shri, P.C., Baskaran, K.

An Efficient FPGA-Based Shunt Active Filter for Power Quality Enhancement
(2019) *Advances in Intelligent Systems and Computing*, 841, pp. 719-724.

DOI: 10.1007/978-981-13-2285-3_84

Government College of Technology, Coimbatore, Tamil Nadu, India

Abstract
Maintaining power quality is being an important task within the operation of the available facility. It is compelling by the quality standards (IEEE-519) to limit the harmonics distortion at suitable intervals. The excessive use of power electronic devices in distribution system has evolved the matter of power quality; it is leading to harmonics generation and in substantial economic losses. Filters approaches are effective and economical technique for harmonics mitigation. This work proposes a novel technique with Field Programmable Gate Array (FPGA) controller for controlling the shunt active filter to mitigate the harmonics in power systems. Harmonics identification methodology and compensation management adopted are incorporated in this work. © 2019, Springer Nature Singapore Pte Ltd.

Author Keywords
FPGA; Harmonics; Instantaneous P-Q theory; Shunt active filter

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150) Satheeshkumar, M.K.[a] , Kumar, E.R.[b] , Srinivas, C.[c] , Suriyanarayanan, N.[d] , Deepty, M.[c] , Prajapat, C.L.[e] , Rao, T.V.C.[e] , Sastry, D.L.[f]

Study of structural, morphological and magnetic properties of Ag substituted cobalt ferrite nanoparticles prepared by honey assisted combustion method and evaluation of their antibacterial activity
(2019) *Journal of Magnetism and Magnetic Materials*, 469, pp. 691-697. Cited 94 times.

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Abstract
Pure and Ag substituted cobalt ferrite nanoparticles (NPs) having the composition (1−x)CoFe2O4: xAg (x = 0.0, 0.2) were synthesized by a novel honey assisted combustion method in order to investigate their structural and magnetic properties along with their antibacterial activity. XRD patters confirm the spinel phase of CoFe2O4 and the presence of silver (Ag) nanoparticles in the spinel network. The incorporation of Ag in CoFe2O4 spinel structure enhanced the size of the unit cell, resulting to higher value of lattice parameter (a) compared to the pure CoFe2O4. The sintering process promoted the growth of the crystallite sizes (D). The crystallite sizes of the synthesized and annealed powders were found in the range of 24–41 nm. From the EDX studies, it seemed that the distribution of Ag nanoparticles was non-uniform. The saturation

magnetization (Ms) and coercivity (Hc) of the powders were influenced by annealing as well as with the substitution of Ag. The highest value of saturation magnetization (60 emu/g) was obtained by the CoFe2O4 nanoparticles with the coercivity value 1358 Oe. The saturation magnetization and coercivity of Ag doped CoFe2O4 were less than that of pure CoFe2O4. The present cobalt ferrite nanoparticles and Ag doped cobalt ferrite nanoparticles have shown good antibacterial activities. But Ag doped cobalt ferrite nanoparticles seems to be the potential candidates for effective antibacterial activity. The structural and magnetic results along with the results of antibacterial activities are reported in the present manuscript. © 2018 Elsevier B.V.

Author Keywords
Honey assisted synthesis; Magnetic properties; Nanoparticles; Structural analysis

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151) Ramesh, K.[a] , Baranitharan, P.[a] , Sakthivel, R.[b]

Investigation of the stability on boring tool attached with double impact dampers using Taguchi based Grey analysis and cutting tool temperature investigation through FLUKE-Thermal imager
(2019) *Measurement: Journal of the International Measurement Confederation*, 131, pp. 143-155. Cited 32 times.

DOI: 10.1016/j.measurement.2018.08.055

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Abstract
This article focuses on the investigation of machining characteristics of double impact dampers attached with boring tool and grey relational analysis (GRA) based multi-objective optimization for lower tool wear and better cutting force. Taguchi based orthogonal array method was exploited to formulate the experimental plan for the boring operation. Considering impact damper positions, speed and depth of cut as the input control factors, the output responses such as cutting force and tool wear were obtained from the L27 orthogonal array. ANOVA results exposed that damper position and speed had more effect on tool wear and cutting force respectively than depth of cut. Based on the obtained output response for cutting force and tool wear a comprehensive mathematical model was developed. The developed mathematical model for tool wear and cutting force predicted values similar to that of experimental results. The obtained result was corroborated clinched Fluke thermal image analyzer. Thermal imaging result showed that the optimized cutting conditions gives low tool temperature there by reduced tool wear can be obtained. Multi-objective criteria optimization was done through GRA technique and the recommended optimum parameters set provides better cutting force (Cf) of 342.47 N and less tool wear (Tw) of 0.22 mm. © 2018 Elsevier Ltd

Author Keywords
Boring process; Fluke thermal image analyzer; Gra; Impact dampers; Taguchi; Tool wear

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152) Rajupillai, K.[a] , Palaniammal, S.[b]

Frame Reconstruction with Noise Reduction in Hilbert space and Application in Communication Systems
(2019) *Mathematics and Computers in Simulation*, 155, pp. 324-334.

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Abstract
In this work, classification for Frame and Fourier coefficient has been discussed. We provided the relation between hidden code coefficients and signal coefficients on L2[−T,T] and introduced a theorem that has been proved for recovering the original signal. We provided Key exchange algorithms to store or transmit the information. After decoding, we recovered the filter signal that is less than or equal to original signal with negligible amount of errors. In the last theorem of this paper, we provided a technique to obtain the error to recover the exact information. The application in communication systems for speech signal with low and high frequencies has been discussed at the end. © 2018 International Association for Mathematics and Computers in Simulation (IMACS)

Author Keywords
Frame; Hilbert space; Orthonormal basis; Signal reconstruction

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153) Rajupillai, K.[a] [b] , Palaniammal, S.[c]

α-Phase retrieval frame in Hilbert space and its application
(2019) *Mathematics and Computers in Simulation*, 155, pp. 269-276.

DOI: 10.1016/j.matcom.2018.05.005

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Abstract
In the present work, the properties of α-phase retrieval frame with a redundant set of vectors under perturbation of the frame set have been discussed. We provided the necessary and sufficient condition to exist in the exact reconstruction using α-phase retrieval frame. The deletion of the noise for the reconstructed signal has been discussed. Finally, this paper provided if bounded nonlinear operator Lα on infinite dimensional complex Hilbert space is a global phase shift, then Kernel of the operator is spanning a set of the vector. © 2018 International Association for Mathematics and Computers in Simulation (IMACS)

Author Keywords
Frame; Hilbert space; Orthonormal basis; Phase retrieval; Signal reconstruction

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

Building a low cost wind turbine in highways for rural house electricity demand
(2019) *Environmental Progress and Sustainable Energy*, 38 (1), pp. 278-285. Cited 9 times.

DOI: 10.1002/ep.12917

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Abstract

The main aim of this work is to design, fabricate, and test a wind turbine for power generation applications in rural areas. Vertical Axis Wind Turbines were selected to harness the energy from wind through the drag forces induced due to vehicular movements. Various parameters were analyzed for the design of a low-cost wind turbine. A Savonius blade was selected for the design, which could be accommodated on the median of the highways. By using recycled materials, a low-cost wind turbine was fabricated at a cost of $117.5 approximately. The wind turbine was placed on the houses and on the highway medians to test the power output at various operating conditions. Average electricity consumption at selected rural houses were calculated. The calculated average electricity demand during power cuts in the selected rural houses was around 0.2–0.6 kWh/day. Average generated electricity from the turbine at highways was observed to be around 0.67 kWh/day. The Levelized cost of electricity (LCOE) of the generated electricity from the proposed SWT on highways is around $0.04/kWh. The LCOE of the proposed design is relatively cheaper when compared with the conventional horizontal axis wind turbines. The energy demand during power cuts was met completely when the SWT was placed on the highways. © 2018 American Institute of Chemical Engineers Environ Prog, 38: 278–285, 2019. © 2018 American Institute of Chemical Engineers

Author Keywords
highway energy generation; low cost wind turbine; renewable energy; savonius wind turbine

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