Scopus

Documents

1) Gopalakrishnan, S., Ovireddy, S.

Hybridisation of single-image superresolution with edge-aware multi-focus image fusion for edge enrichment
(2020) *IET Image Processing*, 14 (16), 9 p. Cited 4 times.

DOI: 10.1049/iet-ipr.2020.0527

Department of ECE, Government College of Technology, Coimbatore, TN, 641013, India

Abstract
To break the curtailment of digital imaging and retrieve appropriate information with different focused images, a novel edge-aware multi-focus image fusion is proposed by integrating the single-image super-resolution (SISR) method along with the edge-preserving filters. Initially, the multi-focus images are converted to high resolution images by estimating missing high frequency details from its blurred versions. With acquired high resolution images, smoothing by median and the anisotropic diffusion filters are performed to extract focused regions. An initial weight map is constructed by using maximum selection of pixel intensities of the difference images obtained with filtering. The precision of estimated weight map is further improved by exhibiting morphological operations and guided filter. Finally, the images are fused based on the optimised decision map. Simulation results of proposed fusion work are evaluated with seven metrics and the values are compared with different stateof- the-art methods. Both the quantitative and qualitative analyses showed the excellence of proposed work over other fusion methods. © The Institution of Engineering and Technology 2020.

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2) Raju Pillai, K.[a] , Palaniamma, S.[b]

New Inequalities for Rotor Frames in Hilbert Space
(2020) *Journal of Mathematical Inequalities*, 14 (4), pp. 977-988.

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[a] Department of Mathematics, Government College of Technology, Coimbatore, Tamil Nadu 641 013, India
[b] Department of Science and Humanities, Sri Krishna College of Technology, Coimbatore, Tamil Nadu 641 042, India

Abstract
In this paper, a new identity of the Weyl-Heisenberg frame using a rotation operator has been investigated in Hilbert space. The characterization and significance of Rotor frame inequalities have been discussed by using rotation and translation operators. Also discussed the application of Rotor frames using a rotation operator. Finally, the reconstruction theorem has been investigated for recovers original data. In this work, we would like to highlight that the reconstruction theorem used to obtain the energy of the signal and reconstruct the original signal with eradicated the garbage vector using frame operator in Hilbert space. Today, this technique is very useful in communication systems. ©, Zagreb

Author Keywords
frames; Hilbert space; operators; orthonormal basis; Weyl-Heisenberg frame

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

Clad-modified fiber optic ammonia sensor based on Cu functionalized ZnO nanoflakes
(2020) *Sensors and Actuators, A: Physical*, 316, art. no. 112374, . Cited 17 times.

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[a] School of Electronics Engineering, VIT, Vellore, 632 014, India
[b] Department of Physics, Government College of Technology, Coimbatore, 641 013, India

Abstract
Fabrication and characterization of fiber optic volatile organic compounds (VOCs) sensor using pristine and copper (Cu) functionalized zinc oxide (ZnO) nanoflakes have been reported. Pristine ZnO nanoflakes were synthesized by co-precipitation method and were functionalized with Cu nanoparticles. Further, the synthesized nanoflakes were characterized by X-ray diffraction (XRD), scanning electron microscopy (SEM), energy dispersive spectroscopy (EDS) and X-ray photoelectron spectroscopy. The characterization results reveal that the nanoparticles are in flakes shape with wurtzite structure and also confirm the Cu functionalization. Cladding modification technology was adopted to fabricate the sensor probe followed by dip coating of Cu functionalized ZnO nanoflakes over un-cladded part of an optical fiber. Different VOC concentrations of 0−350 ppm (such as acetone, ammonia, ethanol, methanol, hexane and chloroform) were prepared and their spectral characteristics were recorded at ambient temperature. The sensing analysis revealed that Cu functionalized ZnO nanoflakes can significantly improve the sensitivity towards all VOCs than pristine ZnO and exhibited highest sensitivity (~ 47.4 at 350 ppm) towards ammonia with the limit of detection 10 ppm, being 6 times higher than pristine ZnO. The response towards ammonia was linear (R2 = 0.9912) over the concentration range of 10 ppm–50 ppm. Further, the sensor showed shorter response/recovery time of 11 s and 13 s, stable repeatability along with the long-term stability. The remarkable sensing property advocates that Cu functionalized ZnO nanoflakes are propitious candidate for ammonia sensor. © 2020

Author Keywords
Co-precipitation method; Cu functionalized ZnO nanoflakes; Environment safety; Fiber optic ammonia sensor; Sensitivity; Structural and optical properties

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4) Revathi, B.[a] , Balakrishnan, L.[b] , Pichaimuthu, S.[c] , Nirmala Grace, A.[d] , Krishna Chandar, N.[a]

Photocatalytic degradation of rhodamine B using BiMnO3 nanoparticles under UV and visible light irradiation
(2020) *Journal of Materials Science: Materials in Electronics*, 31 (24), pp. 22487-22497. Cited 20 times.

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[a] Department of Physics, School of Advanced Sciences, Vellore Institute of Technology, Vellore, 632 014, India
[b] Department of Physics, Government College of Technology, Coimbatore, 641 013, India
[c] Multi-functional Photocatalyst and Coatings Group, SPECIFIC, College of Engineering, Swansea University (Bay Campus), Swansea, Wales SA1 8EN, United Kingdom
[d] Centre for Nanotechnology Research, Vellore Institute of Technology, Vellore, 632014, India

Abstract
Rhodamine B (RhB), a toxic dye is environmentally hazardous and harmful to living organisms, which is primarily used in various industries. Multiferroic BiMnO3 (BMO) with (BMO 1) and without (BMO 2) surfactant (CTAB) was synthesized using hydrothermal method, which acts as a photocatalyst for the Rhodamine B dye degradation process. BMO had tested as a photocatalyst for dye degradation of Rhodamine B dye in UV and Visible light irradiation due to its narrow bandgap. On performing various structural and optical characterizations, the structure of as-prepared BMO samples confirmed, and their crystallite size and bandgap were compared for with and without CTAB treated BMO samples. Under UV irradiation, the decomposition of RhB efficiency and decay time had been calculated as 68% and 75 min for BMO 1. In H2O2 assisted

visible light irradiation, BMO 2 shows better performance (90% and 55 min). © 2020, Springer Science+Business Media, LLC, part of Springer Nature.

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5) Loganath, R.[a] , Senophiyah-Mary, J.[b]

Critical review on the necessity of bioelectricity generation from slaughterhouse industry waste and wastewater using different anaerobic digestion reactors
(2020) *Renewable and Sustainable Energy Reviews*, 134, art. no. 110360, . Cited 24 times.

DOI: 10.1016/j.rser.2020.110360

[a] Department of Civil Engineering, Indian Institute of Engineering Science and Technology, Shibpur, Howrah, 711103, India
[b] Department of Civil Engineering, Government College of Technology, Coimbatore, Tamilnadu 641013, India

Abstract
In this review article, a complete review on the generation of bioenergy from various anaerobic reactors was highlighted with respect to the slaughterhouse waste (SHW). The necessity of generation of the bioenergy and an overview of the treatment efficiency of various anaerobic reactor was discussed and also their performance efficiency was also addressed in detail. Ultimately this review facilitates that state-of-art knowledge in production of electrical energy from generated biogas from the slaughterhouse solid and liquid wastewater with respect to all kind of anaerobic reactors. Moreover, this review also highlights the factors which affects the biogas production in slaughterhouse industry. The biogas generation from the SHW is assessed as 16,026 million m3/year. Based on this study finding SHW have high potential to generate the bioelectricity production. This study finds that bioelectricity generation from SHW was around 62,808×106 kWh/year, which contributing the 27% of the total electricity requirement of Iran. The generation of bioelectricity from SHW saves the greenhouse gas emission of about 4096×103 tonnes of CO2-eq/year. Similarly, in 2016 USA slaughterhouse industries discharged 18.4 million metric tons of SHW, which has generated the 22.7×109 kWh of bioelectricity. This review paper provides the valuable insights and data to the policy makers to frame the sustainable long-term energy policy by considering the SHW as a case study. © 2020 Elsevier Ltd

Author Keywords
Anaerobic digestion; Bioelectricity; Bioenergy; Bioreactors; Slaughterhouse waste; Slaughterhouse wastewater

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6) Thirunavukkarasu, A.[a] , Nithya, R.[a] , Sivashankar, R.[b]

A review on the role of nanomaterials in the removal of organic pollutants from wastewater
(2020) *Reviews in Environmental Science and Biotechnology*, 19 (4), pp. 751-778. Cited 67 times.

DOI: 10.1007/s11157-020-09548-8

[a] Department of Industrial Biotechnology, Government College of Technology, Coimbatore, India
[b] Department of Chemical Engineering, Hindustan Institute of Technology and Science, Chennai, India

Abstract
Water scarcity will be the prime threat to the millions of the human race across the globe in the future. In the recent report of WHO, about 50% of people will sustain their livings in the water-stressed zones by 2025. As every industrial sector are demanding clean water resource, it is the high time for the development of reliable strategies to recycle the wastewater efficiently. With the conventional techniques, the supply of resources with an exponential increase in the demand is highly challenging. Hence, the alternative, sustainable, and technologically advanced wastewater treatment processes need to be employed instantaneously to compete for the pace. One such promising approach is the use of nano-sized materials with the high surface area and increased surface reactivity in the removal of pollutants from the wastewater. These

nanomaterials possess unique properties than their bulk forms enabled the researchers from the various fields to exploit their use in the wastewater treatment processes. As a result, multidisciplinary researches targeting water pollution has increased manifold in recent decades. For instance, the nanomaterials assisted photo-catalysis, membrane filtration, and adsorption processes showed effective results in the removal of organic dyes, heavy metal ions, oil spills, and hydrocarbons, etc. The intrinsic physicochemical, electrical, magnetic properties, and the ease of tailor-made functionalization of nanomaterials identified them as one of the most potent candidates in the water technology. However, the specified challenges such as material toxicity, stability, recovery, fouling, etc. are existing in the use of nanomaterials and several successful innovations are prospering to counteract them in recent years. With such high intentness of these nano-sized materials, the present chapter provides a comprehensive report on the pivotal researches made on the wastewater treatment processes.

Author Keywords
Adsorption; Membrane filtration; Nanomaterials; Photo-catalysis; Wastewater treatment; Water scarcity

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7) Nithya, R.[a] , Maheswari, N.[b] , Sabarish, R.[a] , Ayyappan, S.[a]

Enhanced photocatalytic and antimicrobial activities of ultrasound assisted exfoliated graphitic carbon nitride nanorods
(2020) *AIP Conference Proceedings*, 2270, art. no. 70002, . Cited 2 times.

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[a] Department of Physics, Government College of Technology, Coimbatore, India
[b] Department of Physics, Academy of Maritime Education and Training, Chennai, India

Abstract
Polymeric metal free graphitic carbon nitride nanorods were prepared by direct pyrolysis of thiourea at 500? in an air atmosphere and subsequent liquid-phase exfoliation. Synthesized nanomaterials were characterized using X-ray diffraction, FESEM, High resolution TEM, UV-visible spectroscopy, Photo luminescence spectroscopy and Surface area analysis. XRD studies reveal the prepared nanoparticles have a hexagonal structure and the particle size is in the range of 35-80 nm. The FESEM micrograph analysis the surface and visibly reveals nanophase formation and purity of the synthesized sample were confirmed by EDAX analysis. The photocatalytic activity of the graphitic carbon nitride was estimated by degrading 4-Nitrophenol in an aqueous medium. The antibacterial activity of the g-C3N4 nanostructures against Staphylococcus aureus and Escherichia coli bacterial strain for various concentrations (25-100µg/disc) were evaluated using the disc diffusion method. The graphitic carbon nitride nanorods against Escherichia coli showed the strong Zone of Inhibition for 100µg/disc concentration. Evaluated results were compared with the standard commercial drug Ciprofloxacin.

Author Keywords
Escherichia coli; Exfoliated porous nanorods; Ultrasonication

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8) Shaheen Fathima, A., Bhuvaneswari, R., Jeyanthi, J.

Characterization of tannery effluent and synthesis of natural coagulant
(2020) *AIP Conference Proceedings*, 2270, art. no. 60003, .

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Department of Environmental Engineering, Government College of Technology, Coimbatore. Tamilnadu, India

Abstract
Tannery is an oldest and quickest growing trade in Asian nation. Just about each work trade uses notable amounts of chemicals within the method of reworking animal hides into animal skin. Those chemicals discharged through work effluent have pollution. Thus this paper recommend the characterization of work effluent and synthesis of aloevera leaf as a natural coagulant. The study results show that the effluents have extraordinarily high values of turbidity, hardness, chlorides, TSS, Total solids, TDS, BOD and COD. Those values were so much higher than the standard permissible limits alloted by the Central Pollution Control Board (CPCB). Hence it is necessary to treat the tannery effluent for safe disposal. This study conjointly centered on the characterization of coagulant which has particle size of concerning 260nm whereas the zeta potential values powerfully promotes the particle aggregation. The UV illumination photometer showed the absorption wavelength peaks occurred inside a range of 250nm- 580nm induces adsorption bridging. The variation in apex from Fourier-Transform Infrared spectroscopy analysis showed the material mechanism due to presence of hydroxyl and C-H groups. The structure and morphology of aloevera coagulant were predicted through scanning electron microscope (SEM) shows amorphous nature and comperatively porous matrix which allows inter-particle bridging.

Author Keywords
Aloevera; FTIR; Physico-chemical parameter; SEM; Synthesis; UV; Work effluent

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9) Thirunavukkarasu, R.[a] , Periyasamy, S.[b]

Enhancing Diesel Engine Performance and Balancing Emissions with Effect and Contribution of MgO-ZrO2 and AT13 Layered Piston
(2020) *Arabian Journal for Science and Engineering*, 45 (11), pp. 9699-9707. Cited 6 times.

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[a] Department of Mechanical Engineering, Sri Ramakrishna Institute of Technology, Coimbatore, Tamil Nadu 641 010, India
[b] Department of Mechanical Engineering, Government College of Technology, Coimbatore, Tamil Nadu 641 013, India

Abstract
Modern engines need to produce more efficiency in all aspects with low specific fuel consumption and lesser pollutions for environmental betterment. The purpose of this research work is to experimentally identify better thermal barrier coating and their impacts to enhance engine performance with lower specific fuel consumption. Piston crown of a single-cylinder diesel engine is coated with MgO-ZrO2 and Al2O3-13%TiO2 and tested under different loading conditions. The impact of thermal barrier coating performance and emissions compared with standard diesel engine characteristics is investigated. MgO-ZrO2 and Al2O3-13% TiO2 are selected as additional material to coat the piston crown because these materials are physically stable and thermal properties like low heat conductivity, high melting point and high thermal expansion are stable at high temperature. This experimental work has shown an increase in brake thermal efficiency of 32.1% for the TBC engine from 23.4% for the UC engine. Therefore, there is a decrease in brake-specific fuel consumption for TBC engine 0.27 kg/kWh from uncoated engine 0.37 kg/kWh at 9 kg of load decreased by 27.03%. It was observed from the heat balance sheet that the TBC engine useful work was increased by 3.5% compared with the uncoated engine which ultimately decreases the effect of gases like CO and HC due to an increase in the complete combustion by the thermal barrier coating.

Author Keywords
Diesel engine; Emissions; Performance; Piston; Thermal barrier coating

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10) Manikandan, V.[a] , Mirzaei, A.[b] , Petrila, I.[c] , Kavita, S.[d] , Mane, R.S.[e] , Denardin, J.C.[f] , Lundgaard, S.[g] , Juodkazis, S.[g] , Chandrasekaran, J.[h] , Vigneselvan, S.[i]

Effect of neodymium stimulation on the dielectric, magnetic and humidity sensing properties of iron oxide nanoparticles
(2020) *Materials Chemistry and Physics*, 254, art. no. 123572, . Cited 13 times.

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[a] Department of Physics, Kongunadu Arts and Science College, Coimbatore, 641 029, India
[b] Department of Materials Science and Engineering, Shiraz University of Technology, Shiraz, Iran
[c] Faculty of Automatic Control and Computer Engineering, Gheorghe Asachi Technical University of Iasi, Str. Dimitrie Mangeron, Nr. 27, Iasi, 700050, Romania
[d] Centre for Automotive Energy Materials, International Advanced Research Centre for Powder Metallurgy and New Materials, Chennai, Tamil nadu 600113, India
[e] Center for Nanomaterial & Energy Devices, Swami Ramanand Teerth Marathwada University, Dnyanteerth, Vishnupuri, Nanded, 431606, India
[f] Department of Physics, University of Santiago and CEDENNA, Santiago, Chile
[g] Optical Sciences Centre and ARC Training Centre in Surface Engineering for Advanced Materials (SEAM), School of Science, Swinburne University of Technology, Hawthorn, VIC 3122, Australia
[h] Department of Physics, Sri Ramakrishna Mission Vidyalaya College of Arts and Science, Coimbatore, 641 020, India
[i] Department of Physics, Government College of Technology, Coimbatore, 641 013, India

Abstract
Neodymium-doped iron oxide (Nd–Fe2O3) nanoparticles (NPs), synthesized via chemical co-precipitation method where particle size is reduced due to the neodymium doping. The addition of neodymium doping, the applied thermal energy of Fe2O3 changes the dielectric constant and loss. At this juncture, the dielectric constant increases due to the elevation of neodymium concentration and thermal energy which eventually reduces the dielectric value. On comparison of dielectric performance, the pristine Fe2O3 endows a high dielectric constant and loss in comparison to Nd–Fe2O3. Neodymium induces the transition from antiferromagnetic to superparamagnetic. The as-fabricated sensors confirm humidity sensing at different ranges. Fascinatingly, the sensitivity of the sensor has increased owing to the increase of neodymium substitution and decrease of particle size while the response time is decreased. The sensors confirm outstanding performance in corrosive environment and their response and sensitivity time values are respectively 5s and 85%. © 2020 Elsevier B.V.

Author Keywords
Dielectric; Magnetic materials; Magnetic properties; Nanoparticles; Sensors

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11) Muthuchelvam, M.[a] , Kowshalya, A.M.[b]

Modelling Networks as Neighborly Irregular Graphs
(2020) *Wireless Personal Communications*, 115 (1), pp. 391-400.

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[a] Department of Mathematics, Government College of Technology, Coimbatore, India
[b] Department of CSE, Government College of Technology, Coimbatore, India

Abstract
Today’s world is filled with numerous computing devices and electronic gadgets connected to the Internet. These devices continuously sense and deliver their desired task autonomously or via owners. Domestic applications like healthcare monitoring systems, smart farming, noise pollution control, etc., involves many sensors and wearables that tirelessly estimate, evaluate and report the desired outcome. There are circumstances where two or more sensors at the same level, sense the same information and rely to the controller/base station. Handling and processing of such duplicate information results in increased overhead messages and reduced lifetime of sensors. This paper proposes a novel idea to model a network as a Neighborly Irregular graph so that optimal placement of sensor nodes can be guaranteed and communication between sensors at the same level is restricted. A simple and novel algorithm to construct Neighborly Irregular graph is

proposed which converts the underlying network to a Neighborly Irregular graph if the network is not Neighborly Irregular. The proposed idea is tested with smart irrigation system in real time to prove its effectiveness. Experimental results prove that the message overheads are drastically reduced when the underlying network is Neighborly Irregular. © 2020, Springer Science+Business Media, LLC, part of Springer Nature.

Author Keywords
Neighborly irregular graphs; Neighborly regular strength of graphs; Sensors; Smart irrigation system

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

Deep learning based big medical data analytic model for diabetes complication prediction
(2020) *Journal of Ambient Intelligence and Humanized Computing*, 11 (11), pp. 5691-5702. Cited 19 times.

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[a] Department of CSE, KPR Institute of Engineering and Technology, Coimbatore, India
[b] Department of Electrical and Electronics Engineering, Government College of Technology, Coimbatore, India

Abstract
The revolution in digitization makes the health care sector as a prime source of big data. The analysis of these data could be a great supporting source for deriving new insights, which increases the care and awareness about health. Diabetes together with its complications has been recognized worldwide as a chief public health threat. Predicting diabetic complications is considered as a highly effectual technique for augmenting the survival rate of diabetic patients. While many studies currently use medical images and structured medical records, very limited efforts have been dedicated for applying Data Mining (DM) techniques for unstructured textual medical records, for instance, admission and discharge records. Many DM techniques have been generated for envisaging diabetic complications. But in existing methods, the classification as well as prediction accuracy is not so high. So this paper proposes a model centered on Deep Learning (DL) for predicting complications of Type 2 Diabetes Mellitus. The proposed model follows data collection, pre-training, feature extraction, Deep Belief Network (DBN), validation process, and classification steps for predicting diabetic complications. Finally, the performances proffered by the proposed DL based Big Medical Data Analytics model using DBN as well as the prevailing techniques are contrasted with respect to Precision, accuracy, and Recall. The Training, as well as the Testing process, delineates the pervasiveness of risk with an accuracy of 81.20%. This realistic prediction model will be very much useful for effectively managing diabetes. © 2020, Springer-Verlag GmbH Germany, part of Springer Nature.

Author Keywords
Big data; Convolutional neural network; Deep belief network; Gated recruitment unit; K nearest neighbour; Long short term memory; Random forest; Support vector machine

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13) Kulandaivel, D.[a] , Rahamathullah, I.G.[b] , Sathiyagnanam, A.P.[c] , Gopal, K.[d] , Damodharan, D.[e] , Melvin Victor, D.P.[f]

Effect of retarded injection timing and EGR on performance, combustion and emission characteristics of a CRDi diesel engine fueled with WHDPE oil/diesel blends
(2020) *Fuel*, 278, art. no. 118304, . Cited 97 times.

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[a] Department of Mechanical Engineering, Government College of Technology, Coimbatore, TN, India
[b] Department of Mechanical Engineering, Government College of Engineering, Srirangam, TN, India
[c] Department of Mechanical Engineering, Annamalai University, Chidambaram, TN, India

[d] Department of Mechanical Engineering, New Horizon College of Engineering, Bengaluru, KA, India
[e] Department of Mechanical Engineering, Jeppiaar Engineering College, Chennai, TN, India
[f] Department of Mechanical Engineering, Saveetha School of Engineering, SIMATS, Chennai, TN, India

Abstract
In the present study, the effects of late injection timings and EGR rates on combustion, performance and emission characteristics were evaluated in a single cylinder diesel engine that utilizes oil extracted from waste HDPE which was blended with diesel at 30% by vol. (called as D70H30 blend). The experiments were conducted by delaying the injection timing viz., 23°bTDC, 18°bTDC, and 13°bTDC at various bmep. Later the effects of increasing EGR rates viz., 0%, 10% and 20% were studied at late injection timings at peak load condition. The results reveal that the peak cylinder pressure decreases and combustion duration gets shorter with delayed injection timing. For the same SoI timing escalating the EGR rates reduced the mean gas temperature which is reflected in lower HRR peaks. The BTE of the engine deteriorated by 4.6% when the injection timing is retarded from 23°bTDC to 13°bTDC and 3.2% when the EGR rate was escalated from 0% to 20% at peak load. NOx emission significantly decreased by 80% with retarded injection timing and further decreased with the application of EGR. On the other hand, smoke emission aggravated by 22% with retarded injection timing and 24.5% with maximum EGR addition. The HC and CO emissions followed the same trend of smoke emission. It can be concluded that, utilizing 30% waste HDPE oil blend with minimal modification like retarding injection timing and low EGR rates was beneficial in effectively reducing NOx emission with a slight drop in performance. © 2020 Elsevier Ltd

Author Keywords
EGR; HDPE; Injection timing; Plastics; Waste to energy

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14) Arulraj, M.[a] , Palani, P.K.[b] , Vijayan, S.[a] , Pugalenthi, T.[c]

Studies on Microstructural and Tensile Behavior of Aluminium Metal Matrix Composites with Addition of SiCp and Coconut Shell Ash by Squeeze Casting Method
(2020) *Journal of the Chinese Society of Mechanical Engineers, Transactions of the Chinese Institute of Engineers, Series C/Chung-Kuo Chi Hsueh Kung Ch'eng Hsuebo Pao*, 41 (5), pp. 663-670. Cited 1 time.

[a] Department of Mechanical Engineering, Coimbatore Institute of Engineering and Technology, Coimbatore, 641109, India
[b] Department of Mechanical Engineering, Government College of Technology, Coimbatore, 641013, India
[c] Giles Brooker Academy, Coimbatore, 641002, India

Abstract
This experimental study focuses on processing of hybrid metal matrix (LM24-SiCp-coconut shell ash) composite for making castings through squeeze casting process. The primary objective was to analyze the influence of the process parameters namely reinforcement percentage, pouring temperature, squeeze pressure and mould temperature on response. Samples were cast for each experimental condition based on L9(34) orthogonal array. From ANOVA, it was observed that reinforcement percentage and squeeze pressure were the process parameters making a noticeable improvement in tensile strength. Scanning electron microscopy studies were carried on the fractured tensile test specimen to analyze the fracture mechanism. © 2020, Chinese Mechanical Engineering Society. All right reserved.

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

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15) Manikandan, V.[a] , Petrila, I.[b] , Kavita, S.[c] , Mane, R.S.[d] , Denardin, J.C.[e] , Lundgaard, S.[f] , Juodkazis, S.[f] , Vigneselvan, S.[g] , Chandrasekaran, J.[h]

Effect of Vd-doping on dielectric, magnetic and gas sensing properties of nickel ferrite nanoparticles
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[a] Department of Physics, Kongunadu Arts and Science College, Coimbatore, 641 029, India
[b] Faculty of Automatic Control and Computer Engineering, Gheorghe Asachi Technical University of Iasi, Str. Dimitrie Mangeron, Nr. 27, Iasi, 700050, Romania
[c] Centre for Automotive Energy Materials, International Advanced Research Centre for Powder Metallurgy and New Materials, Chennai, Tamil Nadu 113, India
[d] Center for Nanomaterial & Energy Devices, Swami Ramanand Teerth Marathwada University, Dnyanteerth, Vishnupuri, Nanded, 431606, India
[e] Department of Physics, University of Santiago and CEDENNA, Santiago, Chile
[f] Optical Sciences Centre and ARC Training Centre in Surface Engineering for Advanced Materials (SEAM), School of Science, Swinburne University of Technology, Hawthorn, VIC 3122, Australia
[g] Department of Physics, Government College of Technology, Coimbatore, 641 013, India
[h] Department of Physics, Sri Ramakrishna Mission Vidyalaya College of Arts and Science, Coimbatore, 641 020, India

Abstract
Pristine and vanadium-doped nickel ferrite (NiFe2O4) nanoparticles (NPs) were prepared by a chemical co-precipitation method. They were characterized by X-ray diffraction, scanning electron microscopy and X-ray photoelectron spectroscopy to explore their crystallinity, morphology and chemical states. Dielectric constant and dielectric loss properties were studied as a function of frequency and temperature and it was found that V-doping resulted in the enhancement of the dielectric properties. Both pristine and V-doped ferrites showed superparamagnetic nature and zero coercivity and retentivity. However, the saturation magnetization was decreased after V-doping, suggesting presence of superexchange interaction between A–B sites. Both pristine and V-doped NiFe2O4 NPs were also used for NO sensing studies and it was revealed that V-doped gas sensor revealed a better sensing performance (response of 5 s and sensitivity of 43 to 200 ppm NO gas) than pristine one (response of 9 s and sensitivity of 37 to 200 ppm NO gas). © 2020, Springer Science+Business Media, LLC, part of Springer Nature.

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16) Damotharasamy, S.

Approach to model human appearance based on sparse representation for human tracking in surveillance
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Department of Ece, Government College of Technology, Coimbatore, Tamil Nadu, India

Abstract
In human tracking, sparse representation successfully localises the human in a video with minimal reconstruction error using target templates. However, the state-of-the-art approaches use colour and local appearance of a human to discriminate the human from the background regions, and hence fail when the human is occluded and appears in the varying illumination environment. In this study, a robust tracking algorithm is proposed that utilises gradient orientation and fine and coarse sparse representation of the target template. Sparse representation-based human appearance model utilises weighted gradient orientation that is insensitive to illumination variation. Coarse and fine representation of sparse code facilitates tracking under varying scales. Subspace learning from image gradient orientation is enforced with occlusion detection during the dictionary updation stage to capture the visual characteristics of the local human appearance that supports tracking under partial occlusion with lesser tracking error. The proposed human tracking algorithm is evaluated on various datasets and shows efficient human tracking performance when compared to the other state-of-the-art approaches. Furthermore, the proposed human tracking algorithm is suitable for surveillance applications. © The Institution of Engineering and Technology 2020.

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17) Veerasamy, V.[a] , Wahab, N.I.A.[a] , Ramachandran, R.[b] , Othman, M.L.[a] , Hizam, H.[a] , Islam, M.Z.[a] , Nasir, M.N.M.[a] , Irudayaraj, A.X.R.[a]

Load flow analysis using intelligence-based hopfield neural network for voltage stability assessment
(2020) *2020 2nd International Conference on Smart Power and Internet Energy Systems, SPIES 2020*, art. no. 9242541, pp. 21-26.

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[a] Universiti Putra Malaysia (UPM), Advanced Lighting Power and Energy Research (ALPER), Department of Electrical and Electronic Engineering, Serdang, Malaysia
[b] Government College of Technology, Department of Electrical Engineering, Coimbatore, Tamilnadu, 641013, India

Abstract
This paper presents a novel intelligence-based recurrent hopfield neural network (HNN) for solving the non-linear power flow equations. The proffered method is an energy function-based approach formulated using power residuals of the system. The dynamics associated with the neural networks are minimized by intelligence-based technique to determine the unknown parameters such as voltage magnitude (V) and phase angle (d) of the system. A hybrid particle swarm optimization-gravitational search algorithm (PSO-GSA) has been used to minimize the dynamics of HNN and its stability is proved in Lyapunov sense of notion. The effectiveness of the method is tested on IEEE 14-bus system and the results obtained are compared to the conventional newton raphson method. Moreover, the stability indices such as voltage stability load index, line stability index, fast voltage stability index and line stability factor pertaining to the assessment of stability under the contingency case of N-1-1-1 was evaluated using the presented load flow analysis technique to study the stability of the system. © 2020 IEEE.

Author Keywords
Hopfield neural network; Load flow analysis; Newton raphson and voltage stability analysis; Particle swarm optimization - gravitational search algorithm

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

Developing a smart fuel using artificial neural network for compression ignition engine fueled with Calophyllum inophyllum diesel blend at various compression ratio
(2020) *Environmental Progress and Sustainable Energy*, 39 (5), art. no. e13356, . Cited 2 times.

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[a] Hindusthan Institute of Technology, Coimbatore, India
[b] Government College of Technology, Coimbatore, India
[c] Hindusthan College of Engineering and Technology, Coimbatore, India

Abstract
In machinery, it is evident that the computing system for self-automated machinery derives nonlinear and complex equations by comparing the machinery's different input parameters with their corresponding performance output parameters. In order to operate the machinery with good performance and better efficiency, the computing system needs a machine-learning algorithm. Most recent researchers have concentrated more on self-driving vehicle, which seems to be lack of developing a strong algorithm for compression ignition (CI) engines to predict the performance and emission output parameter. Thus, this article deals with the prediction of performance and emission characteristics of CI engine fueled with 25% Calophyllum inophyllum and 75% diesel blend (CIB25) at various compression ratios using artificial neural network (ANN). Performance and emission tests were conducted in a single-cylinder four-stroke variable-compression-ratio CI engine fueled with CIB25 with varying loads and at a constant speed of operation. Experimental investigation indicates that 18:1 compression ratio

gives better performance results when CIB25 is used as the fuel. Emission test results show better emission characteristics at 17:1 compression ratio. These results show that some input factors affect the output factors under some set of operating conditions, while some input factors improve them. ANN developed for the CI engine learns how the input factors affect and improve the output factors. Also, developed neural network is found to be satisfactory, and it predicts the output at a regression value of 0.998 with an average error of 1.77% in the case of CIB25. © 2019 American Institute of Chemical Engineers

Author Keywords
artificial neural network; biodiesel; Calophyllum inophyllum; feed-forward back-propagation network; prediction model; smart fuel

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19) Sivaramakrishnan, R.[a] , Suresh, S.[b] , Pugazhendhi, A.[c] , Mercy Nisha Pauline, J.[d] , Incharoensakdi, A.[a e]

Response of Scenedesmus sp. to microwave treatment: Enhancement of lipid, exopolysaccharide and biomass production
(2020) *Bioresource Technology*, 312, art. no. 123562, . Cited 42 times.

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[a] Laboratory of Cyanobacterial Biotechnology, Department of Biochemistry, Faculty of Science, Chulalongkorn University, Bangkok, 10330, Thailand
[b] Department of Chemistry, SRM Institute of Science and Technology, Ramapuram Campus, Chennai, Tamil Nadu 600 089, India
[c] Innovative Green Product Synthesis and Renewable Environment Development Research Group, Faculty of Environment and Labour Safety, Ton Duc Thang University, Ho Chi Minh City, Viet Nam
[d] Department of Industrial Biotechnology, Government College of Technology, Coimbatore, Tamil Nadu 641 013, India
[e] Academy of Science, Royal Society of Thailand, Bangkok, 10300, Thailand

Abstract
The present study focuses on the use of microwave irradiation to improve the production of lipid, exopolysaccharide and biomass in the microalgae Scenedesmus sp. Microwave treatment conditions such as microwave power, duty cycle % and time was optimized to increase the biomass and lipid content of Scenedesmus sp. Microwave power 100 W, duty cycle 40 %, and 2 min treatment time led to a substantial improvement in the biomass and lipid content. Due to the simultaneous improvement in both the biomass and lipid content, the total lipid production was improved from 0.76 (microwave untreated) to 1.42 g/L (microwave treated) (12 days grown cells). In addition, with biomass and lipid content, microwave treatment also enhanced the production of Exopolysaccharides (EPS) up to 2.3-folds. Furthermore, biodiesel properties were improved to some extent after the microwave treatment. Microwave irradiation is a promising physical treatment method for microalgae to improve total lipid production. © 2020 Elsevier Ltd

Author Keywords
Biomass; Exopolysaccharides; Lipids; Microalgae; Microwave; Oxidative stress

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20) Subannan Palanisamy, K.[a] , Ramachandran, R.[b]

FinFET-based power-efficient, low leakage, and area-efficient DWT lifting architecture using power gating and reversible logic
(2020) *International Journal of Circuit Theory and Applications*, 48 (8), pp. 1304-1318. Cited 8 times.

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[a] Nandha College of Technology, Erode, India
[b] Government College of Technology, Coimbatore, Tamil Nadu, India

Abstract
For ultra-low-power applications, the computing components are smaller in size and consume less energy. In nonstationary signal analysis, the transformation plays an important role. Out of different transformation techniques, the most famous and dominant architecture is the discrete wavelet transform. The building block of the architecture should be optimized by all parameters. In this paper, the optimization was done on the power reduction and leakage current reduction. A new FinFET-based lifting-based wavelet architecture was proposed. Power gating and reversible logic methodology are proposed for the FinFET-based transform to reduce the dynamic power by about 30%. The proposed FinFET-based processing elements were utilized in the various blocks of the lifting-based DWT architecture. The implementation was done in 32-nm CMOS and FinFET technology. From the results, it has been investigated that the FinFET-based circuits are efficient when compared with CMOS technology. This is due to the second-order effects happening in CMOS circuits below 45 nm. The proposed design consumes less area and low leakage current and power when compared with the CMOS technology. Future trends of using multigate devices below 14 nm technology are presented finally. © 2020 John Wiley & Sons, Ltd.

Author Keywords
adder; CMOS; DWT architecture; FinFET; leakage reduction; lifting-based DWT; low power; MAC; multiplier

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21) Veerasamy, V.[a] , Wahab, N.I.A.[a] , Ramachandran, R.[b] , Madasamy, B.[c] , Mansoor, M.[a] , Othman, M.L.[a] , Hizam, H.[a]

A novel RK4-Hopfield Neural Network for Power Flow Analysis of power system
(2020) *Applied Soft Computing Journal*, 93, art. no. 106346, . Cited 16 times.

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[a] Advanced Lightning, Power and Energy Research (ALPER), Department of Electrical and Electronics Engineering, Faculty of Engineering, Universiti Putra Malaysia (UPM), Selangor, UPM Serdang 43400, Malaysia
[b] Department of Electrical Engineering, Government College of Technology, Coimbatore, 641013, India
[c] Department of Electrical Engineering, Alagappa Chettiar Government College of Engineering and Technology, Karaikudi, 630004, India

Abstract
This paper presents a novel Runge–Kutta (RK4) based modified hopfield neural network (MHNN) for solving a set of non-linear transcendental power flow equations of power system. The proffered method is a Lyapunov based energy function approach to minimize real and reactive power mismatches of the system. A set of non-linear differential equations derived from energy function, describing the dynamical behavior of HNN is framed for solving Power Flow equations. These dynamic equations of the network are solved by RK4 method to deduce the unknown variables of the system. The feasibility of proposed method is tested on 5-bus, IEEE 14-bus, 39-bus and 57-bus test system. The analytical equation describing the behavior of MHNN is coded in MATLAB software. The results obtained reveal that the suggested method gives accurate solution and reduces the computational complexity than conventional Newton Raphson (NR) method. The sensitivity analysis is also tested for change in R/X ratio of the system, initial conditions and loading of the system. The proposed method is robust for above specified changes and involves less computational effort. To prove the applicability and consistency of projected method, IEEE 118-bus system has been tested. The power flow solutions found through proffered method are compared with solutions obtained from numerical approaches in order to validate the proposed approach. Moreover, the stability of the system is studied in Lyapunov sense of notion which assures converged solution of proposed method. © 2020

Author Keywords
4th order Runge–Kutta (RK4) method; Euler; Iwamoto; Modified Hopfield Neural Network (MHNN); Newton Raphson (NR) method; Power Flow Analysis (PFA)

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22) Sharmila, G.[a] , Muthukumaran, C.[a] , Kirthika, S.[a] , Keerthana, S.[a] , Kumar, N.M.[b] , Jeyanthi, J.[c]

Fabrication and characterization of Spinacia oleracea extract incorporated alginate/carboxymethyl cellulose microporous scaffold for bone tissue engineering
(2020) *International Journal of Biological Macromolecules*, 156, pp. 430-437. Cited 44 times.

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[a] Bioprocess Laboratory, Department of Industrial Biotechnology, Government College of Technology, Coimbatore, Tamilnadu 641 013, India
[b] Department of Genetic Engineering, SSRM Institute of Science and Technology, Kattankulathur, Tamilnadu 603 203, India
[c] Department of Civil Engineering, Government College of Technology, Coimbatore, Tamilnadu 641 013, India

Abstract
In recent years, plant based scaffold due to its inherent properties such as mechanical stability, renewability, easy mass production, inexpensiveness, biocompatibility and biodegradability with low toxic effects have received much attention in the field of bone tissue engineering. Design of good tissue compatible plant based polymer scaffold plays a vital role in biomedicine, nanomedicine and in various tissue engineering applications. The present study focused on the fabrication of a novel herbal scaffold using the medicinal plants Spinacia oleracea (SO) and Cissus quadrangularis (CQ) extracts incorporated with Alginate (Alg), Carboxy Methyl Cellulose (CMC) by lyophilization method. The structural nature and the properties of prepared scaffold were analyzed by XRD, FE-SEM, FTIR, EDAX, TGA, swelling ratio, porosity, in-vitro degradation and cell viability studies. The biocompatible nature of the plant based polymer scaffold was assessed using MG-63 Human Osteosarcoma cell line. The investigation of biocompatibility study showed that Alg/CMC/SO scaffold expressed higher cell viability than Alg/CMC/SO-CQ scaffold, which possess better cellular biocompatibility. The results of the present study suggested that plant based Alg/CMC/SO scaffold serve as a potential biopolymer scaffold which could be further exploited for bone tissue applications. © 2020 Elsevier B.V.

Author Keywords
Alginate; Scaffold; Spinacia oleracea

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23) Sivashankar, R.[a b] , Thirunavukkarasu, A.[c] , Nithya, R.[c] , Kanimozhi, J.[d] , Sathya, A.B.[a] , Sivasubramanian, V.[a]

Sequestration of methylene blue dye from aqueous solution by magnetic biocomposite: Three level Box–Behnken experimental design optimization and kinetic studies
(2020) *Separation Science and Technology (Philadelphia)*, 55 (10), pp. 1752-1765. Cited 17 times.

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[a] Department of Chemical Engineering, National Institute of Technology Calicut, Calicut, India
[b] Department of Chemical Engineering, Hindustan Institute of Technology and Science, Chennai, India
[c] Department of Industrial Biotechnology, Government College of Technology, Coimbatore, India
[d] Department of Biotechnology, Kamaraj College of Engineering and Technology, Virudhunagar, India

Abstract
An attempt was made to maximize the sequestration of methylene blue (MB) dye from aqueous solution using magnetic biocomposite (WH/MnFe2O4) synthesized by chemical co-precipitation method. WH/MnFe2O4 was characterized by different techniques such as scanning electron microscope, X-ray diffraction, Fourier-transform infrared, and Energy-dispersive X-ray spectroscopy. An ideal experimental design was carried out based on three-factors, three-level Box–Behnken design using response surface methodology in the lab-scale batch study. The adsorption of MB dye on to WH/MnFe2O4 has been found to be highly significant with very low probability (p) values (<0.0001) based on the analysis of variance statistical value. The kinetics of the dye sorption followed the pseudo-second-order equation (R 2 > 0.996). ©

2019, © 2019 Taylor & Francis Group, LLC.

Author Keywords
Box–Behnken design; magnetic biocomposite; Sequestration

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24) Ramasamy, S.[a] , Ahmad, Z.[b] , Bindu, Y.[c] , Torres, J.R.[b]

Simulation based Analysis of Transformerless Photovoltaic Inverter Topologies for Reactive Power handling Capability
(2020) *Proceedings of the 2nd International Conference on Inventive Research in Computing Applications, ICIRCA 2020*, art. no. 9182839, pp. 1028-1034. Cited 2 times.

DOI: 10.1109/ICIRCA48905.2020.9182839

[a] Government College of Technology, Coimbatore, India
[b] Delft University of Technology, Delft, Netherlands
[c] IREDA Ltd, New Delhi, India

Abstract
This study investigates the reactive power generation capability of the existing transformerless Photovoltaic Inverter Topologies (PVIT) with their conventional switching strategies. The topologies such as H5, families of H6 (H6, H6-I, H6-II, H6-III and H6-IV), HERIC, and clamped topologies (optimized H5, passive clamped H6 and HBZVR) have been selected for analysis. Matlab/Simulink simulation platform is employed for the analysis of PVIT. It has been observed that transformerless PVIT with their conventional switching strategies are not suitable for reactive power injection. These topologies are generating highly distorted current at zero crossings during the reactive power flow. The improved switching strategies are needed to make these topologies suitable for the reactive power applications without any modification in the structure of the inverter. © 2020 IEEE.

Author Keywords
Grid; Inverter topologies; Photovoltaic; Reactive power; THD

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25) Nithya, R., Ayyappan, S.

Novel exfoliated graphitic-C3N4 hybridised ZnBi2O4 (g-C3N4/ZnBi2O4) nanorods for catalytic reduction of 4-Nitrophenol and its antibacterial activity
(2020) *Journal of Photochemistry and Photobiology A: Chemistry*, 398, art. no. 112591, . Cited 32 times.

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Department of Physics, Government College of Technology, Coimbatore, Tamilnadu, India

Abstract
Metal-free Graphitic carbon nitride (g-C3N4) nanoparticle was synthesized by an ultrasound-assisted chemical exfoliation method and g-C3N4/ZnBi2O4 nanorods were prepared by the cost-effective hydrothermal technique. As-synthesized nanoparticles were characterized using XRD, FESEM, HRTEM, EDX, UV, PL, BET and XPS. The photocatalytic activity of the g-C3N4/ZnBi2O4 nanocomposite was investigated by treating 4-Nitrophenol at different pH conditions and maximum reduction of 79 % was observed under visible light irradiation. Antibacterial activity of the g-C3N4/ZnBi2O4 nanoparticles were evaluated by disk diffusion method against E.coli and S.aures. The g-C3N4/ZnBi2O4 nanocomposite showed better antibacterial activity towards G− E.coli. With the effect of ZnBi2O4 doping on to the g-C3N4 host structure, the

photocatalytic and antimicrobial efficiency has been enhanced. © 2020 Elsevier B.V.

Author Keywords
4-NP; E. coli; Exfoliated g-C3N4; Porous ZnBi2O4 nanorods; Visible light photodegradation

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26) Senthil Murugan, L.[a] , Maruthupandi, P.[b]

Realization of fault tolerant capability in a multiphase SRM drive using wavelet transform
(2020) *Microprocessors and Microsystems*, 76, art. no. 103104, . Cited 3 times.

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[a] Assistant Professor, Department of Electrical and Electronics Engineering, RVS College of Engineering and Technology, Coimbatore, India
[b] Assistant Professor, Department of Electrical Engineering, Government College of Technology, Coimbatore, India

Abstract
Switched Reluctance Motor (SRM) are widely used in drives market because of its elegant features such as simple arrangement, manufacturing cost, minimal maintenance and wide speed range. Significant investigation has been conducted to lengthen the feasibility of SRM drive technologies in various aspects such as control strategy, torque ripple minimization, an optimal winding arrangement, etc. Even though it has numerous virtues, there are few noticeable issues that occur in SRM. In this paper, the issues like phase open circuit fault, phase-phase short circuit fault, power switch failure, dc link capacitor failure, and encoder faults are discussed using Wavelet Transform (WT) with their experimental results. A multi-phase (10/8 pole) SRM motor is considered to investigate the fault tolerance proficiency and other performance parameters. Initially, a healthy condition of multi-phase SRM is simulated then faults are injected at different phases which are analyzed and validated using MATLAB simulink tool and the same is validated through experimental results. The performance parameters of SRM drive during various faults conditions are analyzed and the impacts of speed and torque are illustrated. © 2020

Author Keywords
Circuits; Communication; Drives; Embedded; Fault-tolerance; Gates; MATLAB simulink; Multi processor chip; Power converter faults; SRM; Wavelet transform

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27) Radhakrishnan, G.[a] , Gopalakrishnan, V.[b]

Applications of internet of things (IOT) to improve the stability of a grid connected power system using interline power flow controller
(2020) *Microprocessors and Microsystems*, 76, art. no. 103038, . Cited 23 times.

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[a] Department Electrical Engg, Sri Krishna College of Engineering and Technology, Coimbatore, Tamilnadu, India
[b] Department Electrical Engg, Government College of Technology, Coimbatore, Tamilnadu, India

Abstract
Using Internet of Things (IoT) technology in the clever network is an essential method to fast active the information of control Grid-system. Also, the grid system is valuable aimed at the compelling administration of the power framework foundation. This paper deals with a logical approach to design an Interline Power Flow Controller (IPFC) for a grid-connected several-line power scheme to improve the scheme strength and to improve the congestion management in a grid

by considering the power flow among the multi-line, IPFC goes to a sequence of paying flexible alternating current transmission system (FACTS) device and it takes the capability toward control the power stream in multi-line transfer organizations. The Distributed Interline Power Flow Controller involves the series and shunt converters in different transmission lines that are between related utilizing a run of the DC connector. In the transmission line, is the IPFC considered for the compensation and control of power flow in a multi-line transmission system. Every converter can give plan reactive compensation off its line also with the frequency. As the converters can exchange dynamic power through their essential DC interface, it can similarly give a frequency of the current. The highest objective is to improve the power flow in transmission lines and also to maintain the system stability at the buses, and it is achieved by developing an IPFC controller along with genetic algorithm. A Simulink model of an Interline Power Flow Controller based several-machine framework alongside genetic algorithm is developed, and its outcomes were compared with the conventional scheme for tuning the proposed controller to confirm their effectiveness and robustness. It also explains the optimization technique in multi-machine power system with an IPFC using GA. Concentrated on the normal for the development and improvement of the brilliant matrix, this paper presented the use of IoT in web-based checking framework of grid-connected power system using IOT. © 2020 Elsevier B.V.

Author Keywords
FACTS devise; GA (genetic algorithm); Internet of things (IoT); IPFC; Series and shunt converters; SVC

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28) Mugilan, T.[a] , Aezhisai Vallavi, M.S.[a] , Santhosh, S.[a] , Sugumar, D.[b] , Christopher Ezhil Singh, S.[c]

Machining of microholes in Ti-6Al-4V by hybrid micro electrical discharge machining to improve process parameters and flushing properties
(2020) *Bulletin of the Polish Academy of Sciences: Technical Sciences*, 68 (3), pp. 565-573. Cited 4 times.

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[a] Department of Mechanical Engineering, Government College of Technology, Coimbatore, Tamil Nadu, India
[b] Department of ECE, Karunya Institute of Technology and Sciences, Coimbatore, Tamil Nadu, India
[c] Department of Mechanical Engineering, Vimal Jyothi Engineering College, Kannur, Kerala, India

Abstract
In this research work, the Ti-6Al-4V material was used for the investigation of machining parameters by means of hybrid micro electrical discharge machining to improve the machining process and reduce the negative effects of debris accumulation in the drilled hole. L9 orthogonal array was used in the Taguchi based grey relational analysis to optimize the parameters such as material removal rate and diametrical accuracy of the machining process for Ti-6Al-4V. This work encompasses the design, development, and calibration of the work piece vibration platform and experimental analysis of the process parameters by means of the hybrid micro electrical discharge machining process. The maximum material removal rate and minimum surface roughness was observed at the current value of 2.5 A, pulse on time is 2 μs and pulse off time is 14.5 μs. The maximum material removal rate was observed for the increase in pulse on time with 14.4 μs and 4 A current level. The diametrical accuracy of the microholes was increased while increasing the pulse off time and decreasing the pulse on time. The fluid flow simulation has been conducted to find out the pressure drop and to know the velocity of the flow inside the hole for the effective flushing of the debris during machining.

Author Keywords
Diametrical accuracy; Fluid flow simulation; Hybrid micro electrical discharge machining; Material removal rate; Ti-6Al-4V

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29) Thirunavukkarasu, A., Nithya, R.

Adsorption of acid orange 7 using green synthesized CaO/CeO2 composite: An insight into kinetics, equilibrium,

thermodynamics, mass transfer and statistical models
(2020) *Journal of the Taiwan Institute of Chemical Engineers*, 111, pp. 44-62. Cited 36 times.

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Department of Industrial Biotechnology, Government College of Technology, Coimbatore, India

Abstract
The present research reported the co-precipitation mediated synthesis of mixed metallic oxide composite, CaO/CeO2 using ultrasound-assisted extract of Eichhornia crassipes leaves. Fourier Transform Infrared Spectroscopy (FT-IR), Thermo-gravimetric/Differential Thermal analysis (TG/DTA), X-ray Diffraction (XRD), and Brunauer-Emmet-Tellet (BET) isotherms ensured the formation of the mixed oxide. Further, the CaO/CeO2 composite was tested in the anionic azo dye, Acid Orange 7 (AO7) removal process. The optimal removal of 92.68% was attained in the initial solution pH of 2.0 with the composite dosage of 0.1 g for 10 mg/L of AO7 concentration, operating at the temperature of 301 K. Response Surface Methodology (RSM) and Artificial Neural Network (ANN) techniques were employed to model the dye removal process. A second-order quadratic model from Box-Behnken Design (BBD) predicted and optimized the dye removal percentage with high degree of statistical accuracy (Fcal > Ftab at df=9; p < 0.0001). Likewise, a three-layered ANN model using the Levenberg–Marquardt backpropagation algorithm well predicted the dye adsorption process with the least root mean square error values (RMSE 0.3020). Further, the mean impact value (MIV) method identified pH0 as the most influential batch variable in the AO7 dye adsorption process. © 2020 Taiwan Institute of Chemical Engineers

Author Keywords
AO7 dye adsorption; Artificial neural network; Box-Behnken Design; CaO/CeO2 composite; Eichhornia crassipes

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

Enhanced humidity sensing properties of Fe-doped CeO2 nanoparticles
(2020) *Journal of Materials Science: Materials in Electronics*, 31 (11), pp. 8815-8824. Cited 6 times.

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[a] Department of Physics, Kongunadu Arts and Science college, Coimbatore, 641-029, India
[b] Faculty of Automatic Control and Computer Engineering, Gheorghe Asachi Technical University of Iasi, Str. Dimitrie Mangeron, Nr. 27, Iasi, 700050, Romania
[c] Department of Physics, Government College of Technology, Coimbatore, 641 013, India
[d] Department of Materials Science and Engineering, Shiraz University of Technology, Shiraz, 71557-13876, Iran
[e] Center for Nanomaterial & Energy Devices, Swami Ramanand Teerth Marathwada University, Dnyanteerth, Vishnupuri, Nanded, 431606, India
[f] Department of Materials Science and Engineering, Inha University, Incheon, 22212, South Korea
[g] Department of Physics, Sri Ramakrishna Mission Vidyalaya College of Arts and Science, Coimbatore, 641 020, India

Abstract
In this study, pristine and Fe-doped CeO2 nanoparticles (NPs) namely FexCe1−xO2 (x = 0, 0.2, and 0.4) were synthesized through a facile chemical route. Different characterization techniques confirmed formation of NPs with desired morphology and chemical composition. Moreover, optical properties, bandgap, and functional groups were studied. The sensors were fabricated from the synthesized NPs and their relative humidity sensing was investigated. It was found that Fe0.4Ce0.6O2 revealed the best sensing properties where it showed a maximum response of ~ 83.94% to 100% RH, and its response and recovery times were 5 and 17 s, respectively. © 2020, Springer Science+Business Media, LLC, part of Springer Nature.

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31) Veerasamy, V.[a] , Abdul Wahab, N.I.[a] , Vinayagam, A.[b] , Othman, M.L.[a] , Ramachandran, R.[c] , Inbamani, A.[d] , Hizam, H.[a]

A novel discrete wavelet transform-based graphical language classifier for identification of high-impedance fault in distribution power system
(2020) *International Transactions on Electrical Energy Systems*, 30 (6), art. no. e12378, . Cited 19 times.

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[a] Advanced Lightning, Power and Energy Research (ALPER), Department of Electrical and Electronics Engineering, Faculty of Engineering, Universiti Putra Malaysia (UPM), Serdang, Malaysia
[b] Department of Electrical and Electronics Engineering, Sri Shakthi Institute of Engineering and Technology, Coimbatore, India
[c] Department of Electrical Engineering, Government College of Technology, Coimbatore, India
[d] Department of Electrical and Electronics Engineering, Sri Ramakrishna Engineering College, Coimbatore, India

Abstract
This paper proposes a discrete wavelet transform (DWT)-based Graphical Language classifier algorithm for identification of high-impedance fault (HIF) in medium voltage (MV) distribution network of 13.8 kV. The proposed method of classifier is developed using virtual instrumentation LabVIEW facility, for detection of various faults such as symmetrical, unsymmetrical, and HIF in the system. Initially, the MV distribution feeder network has been modeled in MATLAB/Simulink, and the DWT analysis has been carried out with the introduction of various faults in the network to extract the features. The extracted features such as SD and energy values from the fault current signals have been applied to the proposed classifier algorithm to identify the type of fault. The effectiveness of the presented method has been tested and compared with the similar conventional fuzzy-based approach. The results indicate that the proposed classifier algorithm outperforms to give 100% accuracy, while the fuzzy-based approach misclassifies the double line to ground fault (LLG), three-phase fault (LLLG), and HIF. Furthermore, the proposed algorithm with LabVIEW facility is more flexible and can be implemented in real time using data acquisition unit for obtaining fault current signal from power system. © 2020 John Wiley & Sons Ltd

Author Keywords
discrete wavelet transform (DWT); fuzzy inference system (FIS); graphical language (GL) classifier; high-impedance fault (HIF); medium voltage distribution network

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32) Booramurthy, V.K.[a] , Kasimani, R.[b] , Pandian, S.[c] , Ragunathan, B.[c]

Nano-sulfated zirconia catalyzed biodiesel production from tannery waste sheep fat
(2020) *Environmental Science and Pollution Research*, 27 (17), pp. 20598-20605. Cited 45 times.

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[a] Department of Petrochemical Engineering, RVS College of Engineering and Technology, Coimbatore, 641402, India
[b] Department of Mechanical Engineering, Government College of Technology, Coimbatore, 641013, India
[c] Center for Nanoscience and Nanotechnology Research, School of Petroleum Technology, Pandit Deendayal Petroleum University, Gandhinagar, 382007, India

Abstract
This study makes use of tannery waste to produce biodiesel using a nano-sulfated zirconia catalyst (ferric-manganese-doped sulfated zirconia). It was through a modified wetness impregnation method that the catalyst was prepared which was then characterized by scanning electron microscopy (SEM), X-ray diffraction (XRD), and Fourier transform infrared spectroscopy (FTIR). The catalytic property of the synthesized catalyst was determined by using it to produce biodiesel from tannery waste sheep fat. A study was carried out to find the effect of the different parameters affecting the process. Optimized conditions of 15:1 methanol to fat molar ratio and catalytic loading of 8 wt% at 65 °C with a stirring rate of 400 rpm for a reaction duration of 300 min gave a maximum yield of 98.7 wt%. The performance of the catalyst during recycling was analyzed by conducting reusability study. The reused catalyst gives a maximum yield above 90 wt% up to five cycles with a catalyst recovery of 88 wt%. ASTM D6751 standard was used to compare the analyzed fuel properties of the biodiesel. © 2020, Springer-Verlag GmbH Germany, part of Springer Nature.

Author Keywords
Biofuel; Reusability; Sulfated zirconia nano-catalyst; Transesterification; Wetness impregnation method

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2-s2.0-85079216945

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

Surface integrity, fatigue performance and dry sliding wear behaviour of Si3N4–TiN after wire-electro discharge machining
(2020) *Ceramics International*, 46 (8), pp. 10734-10739. Cited 28 times.

DOI: 10.1016/j.ceramint.2020.01.082

[a] Mechanical Engineering, Sri Krishna College of Engineering and Technology, Kuniamuthur, Coimbatore, Tamil Nadu 641 008, India
[b] Mechanical Engineering, Government College of Technology, Thadagam Main Road, Coimbatore, Tamil Nadu 641 013, India

Abstract
Silicon nitride–titanium nitride (Si3N4–TiN) ceramic composite was machined by wire-electro discharge machining (WEDM) to characterize the surface integrity and to investigate its effect on fatigue performance. Dry sliding wear behaviour of Si3N4–TiN sliding against EN32 steel was also tested. The polished and machined surfaces were examined for finding the hardness. The wire-EDM cut surface was examined with scanning electron microscope (SEM) for obtaining its microstructure. The wire-EDM of silicon nitride–titanium nitride produced a rough recast surface with different types of defects like micro-cracks, micro-pores, globules, droplets and surface craters. The material deposition to work specimen after machining was scrutinized by EDAX composition analyzer. The polished surface and wire-EDM cut surface were examined for determining the fatigue performance and it was observed that a deficiency of 25–35% in fatigue life in wire-EDM cut surface than that of the polished surface. Also, the wire-EDM cut surface exerts very high tensile residual stress compared to the polished surface. From the results, it is evident that the polished surface exhibits better surface finish and fatigue life, higher wear resistance and micro-hardness than that of the machined surface. © 2020 Elsevier Ltd and Techna Group S.r.l.

Author Keywords
EDAX; Fatigue; SEM; Surface integrity; Wear; Wire-EDM

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2-s2.0-85077920215

34) Senthil Murugan, L.[a] , Maruthupandi, P.[b]

Sensorless speed control of 6/4-pole switched reluctance motor with ANFIS and fuzzy-PID-based hybrid observer
(2020) *Electrical Engineering*, 102 (2), pp. 831-844. Cited 11 times.

DOI: 10.1007/s00202-019-00915-5

[a] Department of Electrical and Electronics Engineering, RVS College of Engineering and Technology, Coimbatore, India
[b] Department of Electrical Engineering, Government College of Technology, Coimbatore, India

Abstract
This paper presents the sensorless speed control of 6/4 pole SRM drive based on hybrid observer (HO). It consists of two modes, i.e., current sliding mode observer is for high speed and flux linkage sliding mode observer is for low speed control. A nonlinear model of SRM is simulated in MATLAB/Simulink. HO is simulated from low to high speed level, and also estimated position and speed errors are optimized with ANFIS and fuzzy-PID methods. Experimental validation is taken for three set speeds, and measured results are compared with the simulated results. Overall speed and position estimated

error, electromagnetic torque ripple output results are compared, and its values are tabulated at the end. This observer has the advantages of high-precision speed control without any additional hardware, and also performance has improved. © 2020, Springer-Verlag GmbH Germany, part of Springer Nature.

Author Keywords
ANFIS and fuzzy-PID; Hybrid observer; Sensorless speed control; SRM drive

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2-s2.0-85077625294

35) Kala R, Deepa P

Adaptive fuzzy hexagonal bilateral filter for brain MRI denoising
(2020) *Multimedia Tools and Applications*, 79 (21-22), pp. 15513-15530. Cited 15 times.

DOI: 10.1007/s11042-019-7459-x

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

Abstract
Magnetic resonance image (MRI) plays a crucial role in medical applications for visual analysis and processing. Rician noise which arises from the MRI during acquisition can affect the quality of the image. This crucial issue should be addressed by denoising method. The proposed adaptive rician noise removal based on the bilateral filter using fuzzy hexagonal membership function improves the denoising efficiency at various noise variances and preserves the fine structures and edges. The fuzzy weights were obtained with the local mean (μi) and global mean (μg) by constructing hexagonal membership function for local order filter and bilateral filter. Bilateral filter is used to preserve the edges by smoothening the noises in MRI image and local filter is used to preserve the edges and retrieve the structural information. Brain MRI images are restored by multiplying its corresponding fuzzy weight with the restored image of local order filter and bilateral filter. Experiments on synthetic and clinical Brain MRI data were done at different noise levels by the proposed method and the existing methods. The result shows that the proposed method restores the image in better visual quality and can be well utilized for the diagnostic purpose at both low and high densities of rician noise. © 2019, Springer Science+Business Media, LLC, part of Springer Nature.

Author Keywords
Bilateral filtering; Denoising; Fuzzy logic; Magnetic resonance imaging; Membership function; Rician noise

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2-s2.0-85064443253

36) Kishorekumar, R., Deepa, P.

A framework for semantic image annotation using LEGION algorithm
(2020) *Journal of Supercomputing*, 76 (6), pp. 4169-4183. Cited 2 times.

DOI: 10.1007/s11227-018-2280-2

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

Abstract
A new method for the annotation of multispectral satellite images based on image segmentation is proposed in this paper. This method performs the multispectral image annotation by incorporating a modified locally excitatory globally inhibitory oscillatory network (LEGION) algorithm and cascaded support vector machine (SVM) classifier. Initially, images in the training set are represented with semantic concepts. The testing image is segmented into various image regions based on the color information. Segmented image regions are classified using cascaded SVM classifier based on the probabilities of

semantic classes. Experiments are conducted on multispectral images of Coimbatore, Tamil Nadu, India and the result validates the effectiveness of the proposed image annotation algorithm. © 2018, Springer Science+Business Media, LLC, part of Springer Nature.

Author Keywords
Image annotation; LEGION; Segmentation; SVM

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2-s2.0-85043364164

37) Shoba, B.[a] , Jeyanthi, J.[a] , Vairam, S.[b]

Synthesis, characterization of cellulose acetate membrane and application for the treatment of oily wastewater
(2020) *Environmental Technology (United Kingdom)*, 41 (12), pp. 1590-1605. Cited 23 times.

DOI: 10.1080/09593330.2018.1543353

[a] Department of Civil Engineering, Government College of Technology, Coimbatore, India
[b] Department of Chemistry, Government College of Technology, Coimbatore, India

Abstract
This study reports the synthesis of cellulose acetate (CA) membranes of different weight percentages of the polymer ranging from 5 to 17.5 wt% with 2.5% increment and their behaviour towards oil removal from water. The membrane showed decreased water content and porosity and also increased hydraulic resistance upto 3.38 kPa/(l m−2 h−1) as the concentration of polymer increases. The Atomic Force Microscopic studies reveal that the membrane shows decreased arithmetic mean roughness from 36.291 to 5.935 nm as the concentration of the polymer increases from 5% to 17.5%. Field Emission Scanning Electron Microscopy shows the surface morphology of the CA membrane. X-ray diffraction studies indicate that in the membrane having above 15% polymer concentration, the polymer chains orient to regularity showing higher crystallinity. The thermal studies indicate their stability upto 280°C, and exothermic decompositions from 338°C to 380°C implying the compactness of chains as polymer concentration increases. From Total Organic Carbon studies, the oil rejection was found to be maximum (96.4%) for the highest concentration of polymer in the membrane. © 2018, © 2018 Informa UK Limited, trading as Taylor & Francis Group.

Author Keywords
Cellulose acetate membrane; oil rejection; oily wastewater; TG-DTA; water flux

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2-s2.0-85057260751

38) Manikandan, V.[a] , Mirzaei, A.[b] , Sikarwar, S.[c] , Yadav, B.C.[c] , Vigneselvan, S.[d] , Vanitha, A.[d] , Chandrasekaran, J.[e]

The rapid response and high sensitivity of a ruthenium-doped copper ferrite thin film (Ru-CuFe2O4) sensor
(2020) *RSC Advances*, 10 (23), pp. 13611-13615. Cited 6 times.

DOI: 10.1039/d0ra00507j

[a] Department of Physics, Kongunadu Arts and Science College, Coimbatore, 641 029, India
[b] Department of Materials Science and Engineering, Shiraz University of Technology, Shiraz, Iran
[c] Nanomaterials and Sensors Research Laboratory, Department of Physics, Babasaheb Bhimrao University, Lucknow-226 025 UP, India
[d] Department of Physics, Government College of Technology, Coimbatore, 641 013, India
[e] Department of Physics, Sri Ramakrishna Mission Vidyalaya College of Arts and Science, Coimbatore, 641 020, India

Abstract

A sensor displaying a rapid response and high sensitivity was developed by following a simple route. Ionic defects in this sensor were explored using X-ray diffraction analysis. In general, such defects arise from a mismatch of ionic radii, which actually improves the sensing performance. SEM and TEM images of the currently produced particles demonstrated negligible agglomeration, which greatly enhanced the flow of water molecules through the particles. The current sensor showed a rapid response to changes in humidity. Its sensing performance was classified into three different ranges of humidity. Of these humidity ranges, the sensor showed the highest sensitivity (8.84 MΩ per %RH) at low relative humidity (10-20% RH). Furthermore, the sensitivity fall off as the RH was increased from 20 to 99%. The sensor showed a rapid response time of 20 s. Also, the sensor showed 92.98% reproducibility and few effects of aging. This journal is © The Royal Society of Chemistry.

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2-s2.0-85083491335

39) Jothi Lakshmi, S., Deepa, P.

Image SR-based NLM and DCNN improved IBP with cubic B-spline
(2020) *Imaging Science Journal*, 68 (3), pp. 129-140. Cited 1 time.

DOI: 10.1080/13682199.2020.1757294

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

Abstract
Image super-resolution (SR) techniques aim to estimate high-resolution (HR) image from low-resolution (LR) image. Existing SR method has slow convergence and recovery of high-frequency details are inaccurate. To overcome these issues, two algorithms have been proposed for image SR based on non-local means improved iterative back projection (NLM-IIBP), deep convolutional neural network improved iterative back projection (DCNN-IIBP) to produce high-resolution images with low noise, minimal blur by restoring high-frequency details. In NLM-IIBP denoised images have been interpolated using cubic B-spline interpolation and processed using IIBP based on guided bilateral method. NLM preserves the edges effectively, but does not consider high dimensional information and over smoothing during noise minimization. To further improve the resolution, NLM is replaced by DCNN. DCNN denoising method suppresses different noises at different noise levels. The proposed algorithms have been analysed and compared with existing approaches using various parameters to prove the effectiveness. © 2020, © 2020 The Royal Photographic Society.

Author Keywords
cubic B-spline; deep convolutional neural network; denoising; edge preservation; guided bilateral filtering; image restoration; improved iterative back projection; Non-local means; super-resolution

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2-s2.0-85085481905

40) Amuthambigaiyin Sundari, K.[a] , Maruthupandi, P.[b]

Enhanced genetic fuzzy based algorithm for PID switching
(2020) *International Journal of Scientific and Technology Research*, 9 (4), pp. 3681-3683.

[a] RVS Technical Campus, Coimbatore, India
[b] Government College of Technology, Coimbatore, India

Abstract
Tuning of Proportional + Integral + Derivative (PID) controllers is still a challenging and global area of interest. For unstable systems, minimum and maximum value of controller gain exists. The average of the limiting value is used for the controller design and to stabilize the system. A solution to this has emerged as combinatorial optimization wherein heuristic algorithms are used as global methods and derivative free local search methods work as local methods. The solutions obtained by the global methods are further intensified using local search procedures thereby increasing the convergence property of the

combined algorithm. Another approach is to alter the heuristic algorithms to cater the change in the search procedure and evolve improved solution. © IJSTR 2020.

Author Keywords
AC Data set; Child classes; Middling; NLP

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41) Devi, R.[a] , Shanmugalakshmi, R.[b]

Cloud providers ranking and selection using quantitative and qualitative approach
(2020) *Computer Communications*, 154, pp. 370-379. Cited 11 times.

DOI: 10.1016/j.comcom.2020.02.028

[a] Department of IT, Government College of Technology, Coimbatore, Tamil Nadu 641013, India
[b] Government College of Engineering & Technology, Karaikudi, Tamil Nadu 630003, India

Abstract
Cloud computing is basically an internet based computing, whereby shared configurable resources are provided to cloud service consumers as services on demand. As an increasing growth of cloud computing, many enterprises provide different cloud services to cloud service consumers. From cloud service consumer's perspective, it is difficult to choose an appropriate cloud service that satisfies their QoS requirements. As requirements of one cloud service consumer will vary from another, dynamic ranking has to be used to satisfy the requirements of different cloud service consumers. A simple model is needed to address the dynamic ranking of cloud services. The dynamic ranking and selection of cloud services is solved using Linear Programming (LP) model. This project considers quantifiable attributes such as processor speed, cost, etc. and some non-quantifiable attributes like feedback to rank various cloud services according to the requirements of cloud service consumer using Linear Programming (LP) technique. © 2020 Elsevier B.V.

Author Keywords
Cloud computing; Cloud service ranking; Linear programming; QoS; Service selection

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2-s2.0-85080997628

42) Anandhan, A.[a] , Sivasankari, C.[a] , Saravanabhavan, M.[b] , Siva, V.[c] , Senthil, K.[d]

Synthesis, crystal structure, spectroscopic investigations, physicochemical properties of third-order NLO single crystal for optical applications
(2020) *Journal of Molecular Structure*, 1203, art. no. 127400, . Cited 27 times.

DOI: 10.1016/j.molstruc.2019.127400

[a] Department of Chemistry, Government College of Technology, Coimbatore, Tamilnadu 641013, India
[b] Department of Chemistry, Sri Ramakrishna Mission Vidyalaya College of Arts and Science, Coimbatore, Tamilnadu 641020, India
[c] Department of Physics, School of Advanced Sciences, Kalasalingam Academy of Research and Education, Krishnankoil, Tamilnadu 626126, India
[d] School of Materials Science and Engineering, Xi'an Jiaotong University, Xi'an, Shaanxi 710049, China

Abstract
A new proton transfer salt, Glyciniun-2-Mesitylenesulphonate (C11H17NO5S) has been synthesized and its corresponding structure was predicted by Single crystal X-ray diffraction. From SCXRD, crystallised in monoclinic crystal system with the space group of P21/c with the unit cell dimensions: a = 13.2546(9) Å, b = 10.6363(7) Å, c = 9.5362(6) Å, V = 1343.98(15)

Å3, Z = 4. The grown crystal was studied by FTIR, NMR, TG-DTA, CHN analysis, Uv Visible and Z-Scan measurements. The thermal stability was determined by TG/DTA analysis. Vickers microhardness test was carried out to identify the mechanical strength of the material. Third-order non-linear optical response of G2MS crystal was determined by the Z-scan technique. © 2019 Elsevier B.V.

Author Keywords
Microhardness; Nonlinear optics; Organic material; Photoluminescence; SCXRD; Thermal stability

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2-s2.0-85075862838

43) Madhavapandian, S.[a] , MaruthuPandi, P.[b]

FPGA implementation of highly scalable AES algorithm using modified mix column with gate replacement technique for security application in TCP/IP
(2020) *Microprocessors and Microsystems*, 73, art. no. 102972, . Cited 16 times.

DOI: 10.1016/j.micpro.2019.102972

[a] Department of Electronics and Communication Engineering, AAA College of Engineering and Technology, Sivakasi, India
[b] Department of Electrical Engineering, Government College of Technology, Coimbatore, India

Abstract
Field Programmable Gate Arrays (FPGA) offers a faster, increasingly adjustable arrangement. Earlier Data Encryption Standard (DES) algorithms have been developed, however it could not keep up with advancement in a technology and it is no longer appropriate for security. With this motivation, this work developed an efficient FPGA implementation of Advanced Encryption Standard (AES) targets to investigate a huge number of security processes followed in the TCP/IP protocol suite and to suggest a novel new architecture for the existing version. The first contribution of the studies turned into to provide the safety for packages of the utility layer protocols. The AES cryptographic encryption, decryption and key management set of rules to for the safety of transmission control protocol/internet protocol (TCP/IP) protocol suite turned into carried out. AES is one of the maximum famous cryptographic algorithms used for records safety. The cost and consumption of power in the AES can be decreased substantially by way of optimizing the structure of AES. This research article projects an implementation based on modification in Mix column in AES techniques which gives a compact structure with efficient mix column Boolean expression the usage of resource sharing architecture and gate replacement method. The ON-chip power utilization and area overhead of the proposed hardware implementation outperforms the preceding work performed in this area. The proposed architecture have been carried out on the most latest virtex 6 lower power Field programmable gate array (FPGA), whereas overhead and on-chip utilization of power are compared with the previous works and it is proved that proposed method has lower area utilization and ON-Chip utilization of power. © 2019

Author Keywords
AES; FPGA; Resource sharing architecture; TCP/IP; Virtex 6 Lower Power

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2-s2.0-85077511272

44) V, I.N., P, D.

Isolation enhanced MIMO antenna for software defined networking (SDN) adapted ultrawide band (UBW) radio tech applications
(2020) *Microprocessors and Microsystems*, 73, art. no. 102965, . Cited 1 time.

DOI: 10.1016/j.micpro.2019.102965

ECE Department, Government College of Technology, Coimbatore, Tamilnadu 641013, India

Abstract
In this paper four element, four-port “enhanced bandwidth reduced radius single stub annular ring slot” (EBRRSS-ARS) Multiple Input Multiple Output (MIMO) antenna with isolation enhancement structure is proposed. The prospective antenna with stub in annular slot reduces the mutual coupling has simple and compact structure. The EBRRSS-ARSA resonates at 4.4 GHz with a bandwidth of 0.9 GHz with minimum isolation of 10 dB between its elements. The parametric study for the proposed fabricated antenna agrees well with the measurements. © 2019 Elsevier B.V.

Author Keywords
4-element; 4-port; Better isolation; Effective reduction in mutual conductance; MIMO

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2-s2.0-85077470644

45) Bibi, N.A.[a] , Vasanthanayaki, C.[b]

HSI Model-Based Image Dehazing for Remote Sensing Images
(2020) *Journal of the Indian Society of Remote Sensing*, 48 (3), pp. 373-383. Cited 3 times.

DOI: 10.1007/s12524-019-01084-5

[a] Department of Electronics and Communication Engineering, Government College of Technology, Coimbatore, 641013, India
[b] Department of Electronics and Communication Engineering, Government College of Engineering, Salem, 636011, India

Abstract
Remote sensing images taken under hazy conditions have poor quality of the scene. Therefore, haze removal or dehazing is recommended. Due to the presence of haze, there is a resultant decay in the colour and the contrast of the captured image. Dehazing of an image is highly required to improve the quality of the scene. Algorithms based on dark channel prior combined with the haze imaging model were proposed by many researchers in recent years. Dark channel prior has been developed originally according to the statistics of outdoor haze-free images. When the dark channel prior is applied to remote sensing images, it often causes a colour drift phenomenon. This proposed work focuses on hue, saturation, and intensity colour model-based image dehazing, and this is a non-dark channel prior-based method. In this firstly, the atmospheric light is estimated from the hue of the hazy image as haze does not affect the hue. Then, the transmission medium is estimated from the saturation component. Finally, the haze is removed using two estimated parameters. The proposed work performs dehazing at a higher speed and makes it more sufficiently fast for a large-scale application which needs haze removal in the computer vision area. The experimental result shows that the proposed algorithm can achieve haze-free results while preserving the edges and it can improve the contrast of the image. © 2019, Indian Society of Remote Sensing.

Author Keywords
Atmospheric light; Dehazing; Haze imaging model; Transmission medium

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2-s2.0-85076923954

46) Kiruthika, V., Vembu, S.

Dynamic handover algorithm with interference cancellation in 5G networks for emergency communication
(2020) *International Journal of Communication Systems*, 33 (4), art. no. e4227, . Cited 6 times.

DOI: 10.1002/dac.4227

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

Abstract
The integration of 5G networks with cognitive radio (CR) technology enables the software-defined networking (SDN)

infrastructure to support emergency applications. In future, CR can be integrated with 5G and many wireless networks like Wi-Fi, WSN, and MANET for efficient spectrum utilization with higher data rate and lower latency. This CR technology allows unlicensed users to access the licensed spectrum, whenever it is free. In this paper, an efficient SDN architecture with cognitive ability for emergency network is proposed in which the SDN controller prolong communication between disaster victims and first responders and so the first responders can arrive at the spot directly and rescue the victims. The SDN controller has cognitive ability so that the victims can utilize the vacant licensed band to communicate with the first responders, thereby improving the spectrum utilization of the network. Another two main challenges during emergency are the occurrence of interference and link failure. The proposed dynamic handover algorithm with interference cancellation (DHAIC) cancels the interference between the nodes inside the network and performs dynamic handoff, whenever link failure occurs between the cluster head (CH) and the controller. An optimum throughput and minimal delay is achieved to ensure the network performance. © 2019 John Wiley & Sons, Ltd.

Author Keywords
cognitive radio (CR); emergency communication networks (ECN); interference cancellation; mobility management; software-defined networking (SDN)

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47) Senophiyah-Mary, J.[a] , Loganath, R.[b]

A novel method of utilizing waste Printed Circuit Board for the preparation of Fibre Reinforced Polymer
(2020) *Journal of Cleaner Production*, 246, art. no. 119063, . Cited 16 times.

DOI: 10.1016/j.jclepro.2019.119063

[a] Department of Environmental Engineering, Government College of Technology, Coimbatore, Tamil Nadu 641 013, India
[b] Department of Civil Engineering, Indian Institute of Engineering Science and Technology, Shibpur, Howrah, India

Abstract
This study highlights the reuse of the by-products of waste PCB (WPCB) after the metal extraction by pyrometallurgy and bioleaching. In this study the carbonaceous slag obtained was used as a reinforcement to increase the strength of a synthesized nano fibre membrane which could be used for the treatment of wastewater. The synthesized membrane has nano fibres with an average size of 90–110 nm which was produced using an electrospinning machine. The Raman spectroscopy results proved that the carbonaceous slag is rich in carbon and few amounts of graphite was also present in it. The FESEM results proved that the nano fibres were spun perfect which would increase the strength of membrane, thereby increasing the workability towards wastewater treatment. The FTIR results also proved that there is change in the molecular groups of the carbon incorporated fibres. The 3D image of the membrane captured by the Atomic Force Microscope proved that the sample has nano fibre woven on the surface along with the carbon which increases the stability and also as a mere amount of metal is present on the carbon the chance of fouling by the microbes would be limited. Thus, the recycled Fibre Reinforced Polymer (rFRP) is an efficient membrane for the treatment of domestic or industrial wastewater. © 2019 Elsevier Ltd

Author Keywords
Electrospinning; Nano fibres; Recycled Fibre Reinforced Polymers (rFRP); Waste Printed Circuit Board (WPCB); Wastewater treatment

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48) Sadheesh, S.[a] , Joshi, N.N.[a] , Prasath, S.K.A.[b]

GIS based assessment of water quality in periyakulam lake of Coimbatore City
(2020) *Indian Journal of Environmental Protection*, 40 (2), pp. 161-167.

[a] Sri Krishna College of Engineering and Technology, Department of Civil Engineering, Coimbatore, India
[b] Government College of Technology, Department of Environmental Engineering, Coimbatore, India

Abstract
Periyakulam lake is the largest water body having a complete built-up catchment area with the developed area with packets of vegetal cover, open land and inlet nala from Noyyal river. It falls under core corporation limits of Coimbatore city and main bunds of the lake are attached to Pallakad main road from north-eastern portion of the lake to the south-western portion of the lake. The study area is facing surface water contamination by the discharge of sewage and industrial effluent. In this study, the quality of water for its suitability for living organisms and domestic purpose was assessed by its hydrochemical parameters. The flow measurements and sampling were done in the inlets of the lake. The samples were tested for physical and chemical parameters. Geographic information system (GIS) based analysis has been carried out to find out the quality of water for its suitability for living organisms and domestic purposes. Chloride concentration was found to be exceeding the permissible limit in samples near to the first inlet. Based on the study, it was found that most of the samples are suitable for irrigation purpose. © 2020 - Kalpana Corporation

Author Keywords
Coimbatore district; Hydrochemical; Irrigation; Surface water

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2-s2.0-85104158200

49) Rajarathinam, N.[a] , Arunachalam, T.[a] , Raja, S.[b] , Selvasembian, R.[c]

Fenalan Yellow G adsorption using surface-functionalized green nanoceria: An insight into mechanism and statistical modelling
(2020) *Environmental Research*, 181, art. no. 108920, . Cited 38 times.

DOI: 10.1016/j.envres.2019.108920

[a] Government College of Technology, Coimbatore, India
[b] Hindusthan Institute of Technology and Science, Chennai, India
[c] SASTRA University, Thanjavur, India

Abstract
In the present study, green nanoceria (gNC) was synthesized and surface-functionalized (sf-gNC) with amine moieties through chemical means and used as an adsorbent for the removal of Fenalan Yellow G (FYG) from the aqueous solution. Prior to the adsorption process, the optical, structural and textural characteristics of the nanomaterial ensured the presence of highly crystalline and monodisperse nanoceria with the functionalized amine group on their surfaces. The effects of the independent variables of the FYG removal process including initial solution pH, adsorbent dose, initial adsorbate concentration and time were examined for the percent removal. The maximum removal of 93.62% was observed at the pH of 2.0 with the adsorbent dose of 0.1 g for 10 mg/L of FYG dye concentration in 210 min. The equilibrium studies revealed that the maximum adsorption capacity was 25.58 mg/g by monolayer Langmuir model at 303 K and the chemical kinetics results followed pseudo-second-order and chemisorptive Elovich model. The magnitude of the energy variables from the thermodynamic analysis exposed the feasibility and spontaneity of endothermic adsorption. Furthermore, the interactive effects of the screened process variables investigated and optimized through response surface methodology (RSM). Besides, the FYG adsorption behavior was well predicted using artificial neural network (ANN) model with good accuracy (Mean Squared Error < 0.5; Coefficient of determination > 0.99) using 3 input layers, 3 hidden layers and 1 output layer. The study proposed the intrinsic mechanism of adsorbent-adsorbate interactions as either of electrostatic interaction or through surface complexation. Moreover, the prepared amine-modified nanoceria was found to have a minimum of 75% regenerative potential for five adsorption-desorption cycles. © 2019 Elsevier Inc.

Author Keywords
Adsorption; FYG dye; Prosopis juliflora; Surface-functionalized green nanoceria

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50) Anusha, G.[a] , Deepa, P.[b]

Design of approximate adders and multipliers for error tolerant image processing
(2020) *Microprocessors and Microsystems*, 72, art. no. 102940, . Cited 48 times.

DOI: 10.1016/j.micpro.2019.102940

[a] Full Time Reseach Scholar, Department of ECE, Government College of Technology, Coimbatore, Tamil Nadu 641013, India
[b] Department of ECE, Government College of Technology, Coimbatore, Tamil Nadu 641013, India

Abstract
An adder is the basic computational circuit in digital Very Large Scale Integration (VLSI) design. To improve the design metrics of an adder, Approximate Adders (AAs) have been proposed. These adders have been applied and analyzed on 8 × 8 Dadda multipliers (DMs). The design metrics of proposed AAs, Approximate Dadda Multipliers (ADMs) are synthesized in Cadence Register-Transfer Level (RTL) compiler and compares the design metrics with three different technology nodes. The quantitative characterization such as Error Distance (ED), Error Rate (ER), Pass Rate (PR), Mean Error Distance (MED), Normalised Error Distance (NED) of AAs, and ADMs are computed. Image blending and sharpening approaches have been applied using AAs, and approximate multipliers respectively to analyse the image quality metric using the proposed approximate framework. © 2019 Elsevier B.V.

Author Keywords
Approximate adders; Dadda multiplier; Image processing; Low power; Wallace tree multiplier

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51) Muthukumaran, C.[a] , Sivakumar, V.M.[b] , Sumathi, S.[c] , Thirumarimurugan, M.[b]

Adsorptive Removal of Recalcitrant Auramine-O Dye by Sodium Dodecyl Sulfate Functionalized Magnetite Nanoparticles: Isotherm, Kinetics, and Fixed-Bed Column Studies
(2020) *International Journal of Nanoscience*, 19 (1), art. no. 1950004, . Cited 7 times.

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[a] Department of Industrial Biotechnology, Government College of Technology, Coimbatore, Tamilnadu, 641013, India
[b] Department of Chemical Engineering, Coimbatore Institute of Technology, Coimbatore, Tamilnadu, 641014, India
[c] Department of Environmental Engineering, Universiti Tunku Abdul Rahman, Bandar Barat, Kampar, 31900, Malaysia

Abstract
Presently, the treatment of dye-polluted water is a challenging task worldwide. In this study, the adsorptive removal of Auramine-O (AO) dye by magnetite nanoparticles (MNs) and sodium dodecyl sulfate (SDS) functionalized MNs (SFMNs) were investigated. FESEM, HRTEM, EDX, and XRD were employed to characterize the MNs. In batch optimization, dye removal efficiency of 74% was obtained at contact time (40min), pH 6.5, sorbent dosage (20mg), and initial dye concentration (20mg/L). The maximum adsorption capacity of 55.56mg/g was estimated from Langmuir model and the isotherm data were fitted with Freundlich model (R2=0.994) for SFMNs. Pseudo-second-order kinetics was followed by both MNs and SFMNs for the adsorption of AO dye. The continuous AO dye adsorption was studied in fixed-bed column and the effects of bed height, influent flow rate, and initial dye concentration were investigated. The column performance was evaluated by breakthrough kinetic modeling and Yoon-Nelson model was fitted with the data. The results of this study showed that the surface modification of MNs using SDS enhanced the AO dye removal efficiency and SFMNs can be employed as an efficient nanoadsorbent for AO dye removal in batch and continuous mode of operation. © 2020 World Scientific Publishing Company.

Author Keywords
Adsorption; Auramine-O dye; fixed bed; magnetite nanoparticles; SDS

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52) Prakash, R.[a] , Thenmozhi, R.[b] , Raman, S.N.[c] , Subramanian, C.[a]

Characterization of eco-friendly steel fiber-reinforced concrete containing waste coconut shell as coarse aggregates and fly ash as partial cement replacement
(2020) *Structural Concrete*, 21 (1), pp. 437-447. Cited 59 times.

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[a] Department of Civil Engineering, Alagappa Chettiar Government College of Engineering and Technology, Karaikudi, India
[b] Department of Civil Engineering, Government College of Technology, Coimbatore, India
[c] Centre for Innovative Architecture and Built Environment (SErAMBI), Faculty of Engineering and Built Environment, Universiti Kebangsaan Malaysia, Bangi, Malaysia

Abstract
This study investigates the effect of steel fiber addition into eco-concrete made with fly ash, an industrial by product, as partial cement replacement material, and coconut shell, an agricultural waste, as coarse aggregates, on the mechanical properties. Two different mixes were developed, one with coconut shell only as coarse aggregates, and the other with both conventional aggregates and coconut shell as coarse aggregates. The cement content was replaced with class F fly ash at 10% by weight. Steel fibers of 0.25, 0.5, 0.75, and 1.0% by volume of concrete were used. The properties investigated were slump, density, ultrasonic pulse velocity, compressive strength, split tensile strength, flexural strength, and modulus of elasticity (MOE). The findings indicated that the addition of steel fibers resulted in a reduced slump and slightly increased density in the fresh concrete mixes. Meanwhile, enhancements of up to 39% compressive strength and 17% MOE were also obtained. A substantial improvement in split tensile strength and flexural strength were also observed. Steel fiber addition also significantly reduced the brittleness of concrete containing coconut shell. The outcomes of the experiment revealed that steel fiber addition yielded a positive result on the mechanical properties of coconut shell concrete. © 2019 fib. International Federation for Structural Concrete

Author Keywords
coconut shell aggregate; compressive strength; flexural strength; modulus of elasticity, brittleness ratio; split tensile strength; steel fiber

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

Priority and interference aware multipath routing based communications for extreme surveillance systems
(2020) *Computer Communications*, 150, pp. 537-546. Cited 2 times.

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[a] Department of Electrical and Electronics Engineering, Hindusthan College of Engineering and Technology, Coimbatore, Tamilnadu 641032, India
[b] Department of Computer Science Engineering, Government College of Technology, CoimbatoreTamilnadu, 641013, India

Abstract
Increased natural disaster in various urban and rural areas requires immediate attention to avoid the major causes. In real world, immediate recovery to the disaster areas is ensured by adapting the unmanned aerial vehicles that enable people to reach the disaster areas immediately. Here specific task in the disaster area can be completed efficiently by working with multi Unmanned Aerial Vehicle (UAV) instead of single UAV. Here data communication between the UAV needs to be very reliable to ensure the proper disaster management outcome. It is more complex to provide the required services to the users when there is situation arise to switch between the heterogeneous networks. The QoS-Oriented Distributed routing protocol (QOD) is used in the existing methods to give solution to this problem. The data is transferred between hybrid networks with

required QoS. In the existing work, routing is done by considering the QoS consideration thus the efficient and reliable distributed routing is guaranteed. However the existing work lacks from the following issues: It avoids the data transfer through the path in which data transmission is going already to avoid the interference problems which might reduce the throughput rate. Priority of the data transferred from multiple sources are not considered in the previous work and also existing work focused on reducing delay alone as QoS factor. Priority and Interference aware Multipath Routing Protocol (PIMRP) is introduced to rectify this issue in the proposed method. In this method, interference aware and priority routing is ensured by introducing the following research methods. Here, Multipath interference based routing method is used allow transmission of data from multiple path that resides within interference range with guaranteed interference avoidance and increased throughput. Here route path nodes are selected with multiple objectives such as delay, bandwidth, and energy consumption. To provide more preference to the prioritized data transmission nodes with more resource availability is provided to the prioritized data packets which are tiny segmented. The performance of the proposed method is evaluated using NS2 simulation tool. The simulation results confirm the efficiency of the proposed method. © 2019 Elsevier B.V.

Author Keywords
Hybrid wireless network; Interference aware routing; Multipath routing; QoS parameters; Throughput

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54) Booramurthy, V.K.[a] , Kasimani, R.[b] , Subramanian, D.[c] , Pandian, S.[d]

Production of biodiesel from tannery waste using a stable and recyclable nano-catalyst: An optimization and kinetic study
(2020) *Fuel*, 260, art. no. 116373, . Cited 70 times.

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[a] Department of Petrochemical Engineering, RVS College of Engineering and Technology, Coimbatore, 641402, India
[b] Department of Mechanical Engineering, Government College of Technology, Coimbatore, 641013, India
[c] Department of Physical Sciences, Institute of Advanced Research, Gandhinagar, 382426, India
[d] School of Petroleum Technology, Pandit Deendayal Petroleum University, Gandhinagar, 382007, India

Abstract
Biodiesel is produced from tannery waste by transesterification reaction in the presence of Cs2O loaded onto a nano-magnetic core. The catalyst was prepared by co-precipitation followed by thermal oxidation method. The prepared catalyst was characterized using different analytical techniques. Further, the effectiveness of the prepared catalyst was determined by subjecting the fat from tannery waste to transesterification. Investigations were undertaken to determine the effect of the various process parameters influencing the process. Optimum conditions of 21:1 methanol-to-oil molar ratio, 7 wt% catalyst loading at 65 °C for 300 min with a constant stirring rate of 500 rpm produced a maximum yield of 97.1 wt%. The fuel properties of the biodiesel were analyzed as per ASTM test methods and compared with ASTM D6751 standard. Further, kinetic studies were conducted to know the rate of the reaction and its activation energy and frequency factors were identified as 43.8 kJ mol−1 and 7.5 × 104 min−1 respectively. © 2019 Elsevier Ltd

Author Keywords
Biodiesel; Kinetics; Nano-catalyst; Optimization; Transesterification

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

Room temperature LPG sensing properties of tin substituted copper ferrite (Sn−CuFe2O4) thin film
(2020) *Materials Chemistry and Physics*, 240, art. no. 122265, . Cited 22 times.

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[a] Department of Physics, Kongunadu Arts and Science College, Coimbatore, 641029, India
[b] Nanomaterials and Sensors Research Laboratory, Department of Applied Physics, Babasaheb Bhimrao UniversityUP-226025, India
[c] Center for Nanomaterial & Energy Devices, Swami Ramanand Teerth Marathwada University, Dnyanteerth, Vishnupuri, Nanded, 431606, India
[d] Department of Physics, Government College of Technology, Coimbatore, 641013, India
[e] Department of Materials Science and Engineering, Shiraz University of Technology, Shiraz, Iran
[f] Department of Physics, Sri Ramakrishna Mission Vidyalaya College of Arts & Science, Coimbatore, Tamilnadu-20, India

Abstract
Nanocrystalline tin-substituted copper ferrite (Sn0.2Cu0.8Fe2O4) liquefied petroleum gas (LPG) sensors with a surface area of 3.92 m2/g were synthesized by a co-precipitation method. Structural studies confirmed the crystalline nature of Sn0.2Cu0.8Fe2O4 with an average crystallite size of 37 nm. Also, microscopic studies confirmed formation of cuboids and spherical nanoparticles. The gas sensing results toward LPG at room temperature demonstrated promising effects of the incorporation of tin in copper ferrite. As-developed Sn0.2Cu0.8Fe2O4 gas sensor showed a response of 78.78% to 2 vol % LPG with 90% reproducibility and high stability, suggesting its potential for the detection of LPG in real applications. Also, the gas sensor showed fast response time and recovery time. © 2019 Elsevier B.V.

Author Keywords
Copper ferrite; Gas sensor; LPG; Nanoparticle; Sensing mechanism

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56) Kowshalya, A.M.[a] , Gao, X.-Z.[b] , ML, V.[c]

Efficient service search among Social Internet of Things through construction of communities
(2020) *Cyber-Physical Systems*, 6 (1), pp. 33-48. Cited 13 times.

DOI: 10.1080/23335777.2019.1678198

[a] Department of CSE, Government College of Technology, Coimbatore, India
[b] School of Computing, University of Eastern Finland, Kuopio, Finland
[c] Department of EEE, Government College of Engineering, Dharmapuri, India

Abstract
Social Internet of Things is a new paradigm that has integrated two technologies namely Internet of Things (IoT) and Social Networks. IoT is a many vision one paradigm technology whereas Social Networks are platforms where voluminous collaborations between humans exist. The idea of using the collective intelligence gathered by Social Networks in IoT led to the notion of Social Internet of Things (SIoT). SIoT is defined as a social network of objects that are not only smarter but also socially conscious. A fundamental requirement of such a network is efficient service search and discovery mechanisms. This paper proposes a simple algorithm to discover resources/services among SIoT communities. Two key ideas are proposed, namely, i) Detection of communities among established SIoT network and ii) intracommunity and intercommunity service search algorithms for efficient service discovery among SIoT communities. Experimental results prove that the constructed communities are strongly correlated and the efficiency of the proposed algorithms is higher when compared to the existing schemes. © 2019, © 2019 Informa UK Limited, trading as Taylor & Francis Group.

Author Keywords
community detection; service discovery; Social Internet of Things; social networks

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57) Mahakavi, P., Chithra, R.

Effect of recycled coarse aggregate and manufactured sand in self compacting concrete
(2020) *Australian Journal of Structural Engineering*, 21 (1), pp. 33-43. Cited 16 times.

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

Abstract
The possibility of utilizing Manufactured sand (M-sand) and Recycled Coarse Aggregate (RCA) obtained from Ready Mix Concrete (RMC) plant to make self-compacting concrete is evaluated in this research work. In this experiment, 25 Concrete mixes are made in which the Natural Coarse Aggregate (NCA) is replaced with RCA by an amount of 25, 50, 75 and 100%. Similarly, natural river sand is replaced with M-sand by an amount of 25, 50, 75 and 100%. The cement content, water and silica fume are kept back as constant for all mixes. The effect of M-sand and RCA on the fresh and hardened properties of SCC is evaluated. This investigation results showed that the hardened properties of concrete with 50% of M-sand are significantly increased when compared to the control mix. Results showed that the hardened properties of the SCC with 100% of RCA are lesser than the conventional concrete. Therefore, the strength decreases with an increase in the percentage of substitution of RCA. However, the results showed that the SCC with low and medium compressive strength (20MPa–45MPa) can be achieved by using M-sand. © 2019, © 2019 Engineers Australia.

Author Keywords
Compressive Strength; Fresh Concrete; Interfacial Transition zone; Manufactured sand; Recycled Coarse Aggregate; Recycling

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2-s2.0-85068233495

58) Mohan, D.G., Gopi, S.

Induction assisted friction stir welding: a review
(2020) *Australian Journal of Mechanical Engineering*, 18 (1), pp. 119-123. Cited 28 times.

DOI: 10.1080/14484846.2018.1432089

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

Abstract
Friction stir welding (FSW) is limited to use in metals having high melting point due to the inadequate tool life. Tool life is decreasing due to the high wear rate. Welding high melting point metals reduces the tool life. The alternative changing of tool may cost too high. The best way to increase the tool life for friction stir welding of high melting point alloy is to preheat the metal. Preheating reduces the tool wear rate and increases the tool life. One of the best methods to heat ferromagnetic metal is using induction heating process. This chapter aims to review on induction-assisted FSW process. To study the effect of additional heating on FSW in hard metals and to determine its influence on the strength of joining. © 2018, © 2018 Engineers Australia.

Author Keywords
alloys; heating; Induction; laser; tool profile

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59) Ayyappan, S., Vengatajalapathi, N.

Experimental Study on Material Removal Rate and Over-Cut in Electrochemical Machining of Monel 400 Alloys with Coated Tools
(2020) *Lecture Notes on Multidisciplinary Industrial Engineering*, Part F165, pp. 255-268.

DOI: 10.1007/978-981-32-9471-4_21

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

Abstract
Electrochemical machining (ECM) is a promising non-traditional machining process used for machining difficult-to-machine materials. It finds the applications in the field of automotive, electronics, optics, medical, petroleum, nuclear and die industries. Improving an over-cut (OC) is still a tough task in ECM, though it is benefitted with better material removal rate (MRR). Therefore, different coated tools, that is, epoxy-coated tool (ECT) and abrasive-coated tool (ACT), were used in the direction to obtain better OC. It is observed that the ECT technique performs well for reducing the OC in comparison to the other tools under similar conditions and appears more electrochemically stable. The coating on tool avoids the contact of tool surfaces with the intermittent sparks produced in the inter-electrode gap (IEG), thereby ensuring the increase of tool life.

Author Keywords
Abrasive-coated tool; Electrochemical machining; Epoxy-coated tool; Material removal rate (MRR); Over-cut (OC)

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60) Muthukumaran, C.[a] , Sharmila, G.[a] , Manojkumar, N.[b] , Gnanaprakasam, A.[c] , Sivakumar, V.M.[c]

Optimization and Kinetic Modeling of Biodiesel Production
(2020) *Encyclopedia of Renewable and Sustainable Materials: Volume 1-5*, 1-5, pp. 193-201. Cited 9 times.

DOI: 10.1016/B978-0-12-803581-8.10578-8

[a] Government College of Technology, Coimbatore, India
[b] SRM Institute of Science and Technology, Kattankulathur, India
[c] Coimbatore Institute of Technology, Coimbatore, India

Abstract
Biodiesel is currently focused as an alternate eco-friendly and economical source of energy. Biodiesel is mainly produced by the transesterification reaction between oil and the alcohol in the presence of catalyst. Use of non-edible oils for biodiesel production is increased nowadays as compared to edible oils since it is not used for food applications. Biodiesel production is highly influenced by process variables like solvent concentration, oil concentration, type and concentration of catalyst employed and temperature etc. For efficient and effective production of biodiesel, optimization of the process variables is the key step. Statistical optimization method like response surface methodology (RSM) is widely used and successful for several optimization studies. RSM provides the details of optimal points and also synergistic effect of variables on the biodiesel synthesis. In this chapter, the application of RSM in biodiesel production using non-edible jatropha oil was reviewed. Process kinetics also gain importance since it is useful to determine the reactor design and rate controlling stage in the reaction. Various kinetic models for homogeneous and heterogeneous catalyzed biodiesel production were also discussed.

Author Keywords
Biodiesel; Jatropha oil; Kinetic model; Optimization; RSM; Transesterification

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61) Chitharthan, S.[a] , Divakar, S.[b] , Thalaieswaran, S.[c]

Experimental study on mechanical properties of hybrid metal matrix composites using stir casting process
(2020) *Materials Today: Proceedings*, 47, pp. 6926-6933. Cited 4 times.

DOI: 10.1016/j.matpr.2021.05.192

[a] Department of Mechanical Engineering, Karpagam College of Engineering, Coimbatore, 641032, India
[b] Department of Mechanical Engineering, NIT, Trichy, 620015, India
[c] Department of Mechanical Engineering, Government College of Technology, Coimbatore, 641013, India

Abstract
A widespread consent of particulate MMC for manufacturing process was because of the high production cost of components for conventional materials. The current study is targeted to explore the mechanical properties, corrosive behaviour and tribological property of LM13 reinforced with Aluminium Oxide (Al2O3) and Boron Carbide (B4C) with a varying weight percentage of reinforcement particles. The otcome discloses that the strength of hybrid MMC has increased up to 21.3% by increasing the percentage of Alumina by addition of boron carbide (B4C) the hardness increases by 15.65% and the wear rate decreases by 28.63% the stir casting process parameters were varied and the optimal stir casting process parameters was obtained by Taguchi quality design concept. © 2020 Elsevier Ltd. All rights reserved.

Author Keywords
Abbreviations MMC metal matrix composite; Al Aluminium; CFRP carbon fibre reinforced polymers; CMC ceramic reinforced composites; Cu copper; DPH diamond pyramid hardness; FRP fibre-reinforced polymers; GFRP glass fibre-reinforced polymers; HV vickers pyramid number; Mg magnesium; SiC silicon carbide; SS stainless steel; Ti Titanium; TiC titanium carbide; UTS ultimate tensile strength; W tungsten; Zn zinc; Zr zirconium

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62) Mahakavi, P.[a] , Chithra, R.[b]

Effect of RCA, foundry sand on strength and toughness of fibre reinforced self-compacting concrete
(2020) *Materials Today: Proceedings*, 47, pp. 6976-6981.

DOI: 10.1016/j.matpr.2021.05.253

[a] Department of Civil Engineering, Amity School of Engineering and Technology, Amity University, Madhya Pradesh, Gwalior, 474020, India
[b] Department of Civil Engineering, Government College of Technology, Tamil Nadu, Coimbatore, 641013, India

Abstract
The current study is aimed at investigating effects of hooked end and also crimped steel fibres on efficiency of fibre reinforced self-compacting concrete with RCA and also foundry sand also (FR-SCC). Study's findings show that combining fibres with RCA and also foundry sand also in right proportions can significantly boost mechanical properties of FR-SCC. Tests for hardened properties (compressive, break tensile, flexural forces, and also toughness) were carried out in this analysis. There were 20 different mixes of RCA of 0, 25, 50, and also 75 percent Natural Coarse Aggregate (NCA), three different blends of reinforcing hooked end and also crimped steel fibres, and also 15% optimum replacement of foundry sand also. Self-compacting concrete and also fibre reinforced concrete have been shown to be more suitable and also reliable in concrete technology in previous studies. © 2020 Elsevier Ltd. All rights reserved.

Author Keywords
Crimped fibres; Foundry sand; Hooked end fibres; Interfacial transition zone; Recycled coarse aggregate; Self-compacting concrete

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63) Sekar, T., Hemalatha, B., Rajeswari, B., Surendran, R., Vijay, M.

Investigation on the effects of Aspergillus nigerin sustainable bio-micromachining of copper
(2020) *Materials Today: Proceedings*, 46, pp. 3735-3738.

DOI: 10.1016/j.matpr.2021.02.011

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

Abstract
Generally, the components of Micro and Nano electromechanical systems (MEMS and NEMS) are fabricated by conventional and environmental hazardous machining techniques like Chemical/Photochemical, Electric Discharge, Laser beam etc. This work attempts to investigate the effects of Aspergillus niger, a fungus on micro-machining of pure copper without any heat affected zone and environmental hazardous free. Aspergillus niger spores was acquired from Tamil Nadu Agriculture University, Coimbatore and its culture was developed at the laboratory. The major influencing parameters of shaking speed, temperature, time and pH are considered to evaluate the performance of bio-micromachining in terms of micro hardness and specific metal removal rate at 15th day. The result was analysed using SEM images and this research novelty revealed that the reduction of micro hardness of bio-micro machined copper from 103.53 HV0.5to 97.5 HV0.5i.e. reduction of 5.82% was achieved by Aspergillus niger fungus. Also, the specific material removal rate was found as 0.0197mg/h.cm2which prove the potential ability of this process in fabricating MEMS and NEMS components.

Author Keywords
Aspergillus niger; Bio-micromachining; Copper; Micro hardness; Specific material removal rate

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64) Kumar, M.D.[a] , Palani, P.K.[b] , Karthik, V.[c]

Effect of welding parameters on joint strength of rotary friction welded UNS S31803 tubes
(2020) *Materials Today: Proceedings*, 39, pp. 1265-1269. Cited 6 times.

DOI: 10.1016/j.matpr.2020.04.161

[a] Government College of Engineering, Salem, 636 011, India
[b] Government College of Technology, Coimbatore, 641013, India
[c] Metallurgical and Materials Engineering, National Institute of Technology, Trichy, 620 015, India

Abstract
Rotary friction welding (RFW) is a type of solid state joining which is used majorly in the recent years due to its advantages such as low heat input, efficiency of production, ease of manufacture and environment friendliness. Friction welding can be used to join different types of ferrous metals and non-ferrous metals that cannot be welded by conventional fusion welding processes. The concept of design of experiments (DOE) has been used to perform and analyze the experiments, and it is found that heating time has the greater influence on the joint strength. The increase in joint strength with increasing upset load and heating time is observed. The maximum joint strength of 610 MPa achieved at upset load of 1200 kg and heating time of 20 sec. Effect of parameter for various interactions were analysed and it shows that heating time, upset load are the effective parameters. Scanning electron microscope (SEM) analysis reveals ductile and brittle fracture patterns for the high and low tensile strength values of weld specimens.

Author Keywords
Design of experiments; Duplex stainless steel; Rotary friction welding; Tube welding

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65) Irudayaraj, A.X.R.[a] , Wahab, N.I.A.[a] , Umamaheswari, M.G.[b] , Radzi, M.A.M.[a] , Sulaiman, N.B.[a] , Veerasamy, V.[a] , Prasanna, S.C.[c] , Ramachandran, R.[d]

A Matignon's theorem based stability analysis of hybrid power system for automatic load frequency control using atom search optimized FOPID controller
(2020) *IEEE Access*, 8, pp. 168751-168772. Cited 52 times.

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[a] Advanced Lightning Power and Energy Research (ALPER), Department of Electrical and Electronics Engineering, Universiti Putra Malaysia (UPM), Seri Kembangan, 43400, Malaysia
[b] Department of Electrical and Electronics Engineering, Rajalakshmi Engineering College, Chennai, 602105, India
[c] Department of Medical Electronics Engineering, SRM Valliammai Engineering College, Chennai, 603203, India
[d] Department of Electrical and Electronics Engineering, Government College of Technology, Coimbatore, 641013, India

Abstract
The large-scale penetration of intermittent Renewable Energy (RE) sources such as wind and solar power generation may cause a problem of frequency aberration of interconnected Hybrid Power System (HPS). This occurs when the load frequency control of interconnected system is unable to compensate the power balance between generation and load demand. Also owing to the enhancement of future transport, the Plug-in Electric Vehicle (PEV) plays a significant role to customer at demand side. Thus, the PEV can act as a power control to compensate the power balance in Renewable Energy integrated power system. This paper presents a physics inspired Atom Search Optimization (ASO) algorithm for tuning the parameters of Fractional Order Proportional-Integral-Derivative (FOPID) controller for Automatic Load Frequency control of HPS. In this proposed work, an attempt has been made to analyze the frequency stability of HPS using Matignon's theorem. The interconnected HPS consists of reheat thermal power system, RE sources such as wind and solar thermal power generation associated with energy storage devices namely aqua electrolyzer, fuel cell and electric vehicle. The gain and fractional terms of the controller were obtained by minimizing the Integral Time Absolute Error of interconnected system. The robustness of ASO-tuned FOPID controller is tested on two-area HPS that was modelled using MATLAB/Simulink. The results obtained were then compared with other fractional order and classical integer order controllers. From the simulation results, it is inferred that the proposed ASO-tuned FOPID controller gives superior transient and steady-state response compared with other controllers. Moreover, the self-adaptiveness and robustness of the controller was validated to account for the change in RE power generations and system parameters. Furthermore, the effectiveness of the method is proved by comparing its performance with the recent literature works. The real-time applicability of proffered controller is validated in hardware-in-the-loop simulation using Real Time Digital Simulator. © The Author(s) 2020.

Author Keywords
Atom search optimization (ASO); Automatic load frequency control (ALFC); Fractional order proportional-integral-derivative (FOPID); Hybrid power system (HPS); Plug-in electric vehicle (PEV)

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66) Annu, A.[a] , Sivasankari, C.[b] , Krupasankar, U.[c]

Synthesis and characerization of Zro2 nanoparticle by leaf extract bioreduction process for its biological studies
(2020) *Materials Today: Proceedings*, 33, pp. 5317-5323. Cited 18 times.

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[a] Department of Industrial Biotechnology, Government College of Technology, Coimbatore, Tamil Nadu, 641013, India
[b] Department of Chemistry, Government College of Technology, Coimbatore, Tamil Nadu, 641013, India
[c] Department of Computer Science and Engineering, Sri Ramakrishna Engineering College, Coimbatore, Tamil Nadu, 641022, India

Abstract
The aim of the present work is to produce zirconium oxide nano particles by the aqueous extract of plant leaves as a powerful capping and reducing agent. The prominent feature of this research is, it provides an alternate approach to conventional chemical synthesis and thus minimizes its adverse effects on the environment. The synthesized nanoparticles were subjected to various characterization techniques using UV-Visible spectrophotometer, FTIR Spectroscopy, SEM with EDAX and X-ray diffraction analysis. The preliminary confirmation of the synthesized nano zirconia was done by observing its absorbance maxima from UV-Visible Spectroscopy which was further justified from the characteristic peaks of FTIR analysis. SEM micrograph potrayed that the prepared nano zirconia was slightly spherical in shape with smooth and fused surface. The purity of the manufactured nano material was affirmed from the EDAX peaks without any unidentified signal. The sharp and narrower peaks from XRD exemplified the significant enhancement in the crystalline nature of the prepared nano zirconia. Biological studies such as antibacterial, and antioxidant activities were evaluated for the green synthesised

nano zirconia. The manufactured nanoparticles expressed higher antibacterial activity towards both gram negative bacteria and gram positive bacteria. It also exhibited 69% radical scavenging activity which was determined by DPPH assay. To the best of our knowledge, this is one of the very few studies on the preparation of ZrO2 nanoparticles by bio-based method using plant extract for its antibacterial and in vitro antioxidant studies. The future work is focussed on the investigation of anti cancerous activity for the same nanoparticle.

Author Keywords
Anti cancerous activity; Antibacterial activity; Antioxidant activity; Characterization; DPPH assay; Nanoparticles

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67) Raghappriya, M.[a] , Kanthalakshmi, S.[b]

Non-linear Model-based Stochastic Fault Diagnosis of 2 DoF Helicopter
(2020) *Control Engineering and Applied Informatics*, 22 (3), pp. 62-73. Cited 1 time.

[a] Government College of Technology, Coimbatore, India
[b] PSG College of Technology, Coimbatore, India

Abstract
Fault diagnosis of non-linear helicopter systems are affected by inherent characteristics such as non-linear behaviour, high cross coupling effects, external disturbances such as atmospheric turbulence and wind effects. Fault diagnosis in non-linear systems gains importance due to its high complexity and this work focuses on fault detection of helicopter system with the consideration of the inherent non-linearity effects. This paper deals with the detection, identification and classification of sensor, actuator and component faults in nonlinear helicopter systems using model-based state estimation approaches. Approaches include Interacting Multiple Model based Extended Kalman Filter and Interacting Multiple Model based Unscented Kalman Filter. To address problem of fault detection, statistical measures of residual analysis, stochastic likelihood ratio and model probability is proposed. A Comparison of these approaches is presented based on the ability to detect, identify and classify faults in spite of system non-linearity. Algorithm is applied to 2 degrees of freedom helicopter and the results for various fault cases are presented. The results yield better fault detection performance using Interacting Multiple Model based Unscented Kalman Filter.

Author Keywords
Aerospace; Fault detection and diagnosis; FDI for non-linear systems; Model-based estimation and filtering; Non-linear; Sensor and actuator faults

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68) Anitha, A.[a b] , Uma Maheswari, S.[a b]

Diabetic retinopathy detection using local ternary pattern
(2020) *International Journal of Biomedical Engineering and Technology*, 34 (4), pp. 334-353. Cited 2 times.

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[a] Department of Electronics and Communication Engineering, Government College of Technology, Coimbatore, 641013, India
[b] Department of Electronics and Communication Engineering, Coimbatore Institute of Technology, Coimbatore, 641014, India

Abstract
An intelligent way of diabetic retinopathy detection (DR) at an early stage is required to prevent blindness. DR is detected by analysing the retinal background without segmenting the lesions. This work focuses on local ternary pattern (LTP) for analysing texture of the fundus image. As local binary pattern (LBP) is more sensitive to noise and illumination variation,

LTP is employed and its discriminative power is explored. LTP is obtained for all three colour components, red (R), green (G) and blue (B) for different radius considering eight neighbours. The histogram of LTP and variance form a feature set for the classifiers KNN and random forest with ten-fold cross validation. Random forest provides a sensitivity and specificity of 100%. The average sensitivity and specificity of nearly 91% are achieved. The proposed algorithm is very fast and can be used as a screening test for retinal abnormalities detection.

Author Keywords
Computer aided diagnosis; Diabetic retinopathy; Fundus images; K-nearest neighbourhood; KNN; LBP; Local binary pattern; Local ternary pattern; LTP; Random forest

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2-s2.0-85099569538

69) Thillikkani, S.[a] , Nataraj, M.[b]

Fatigue life prediction of heavy vehicle suspension system under varying load conditions
(2020) *Advances in Mechanical Engineering*, 12 (11), . Cited 5 times.

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[a] Department of Mechanical Engineering, JCT College of Engineering and Technology, Coimbatore, Tamil Nadu, India
[b] Department of Mechanical Engineering, Government College of Technology, Coimbatore, Tamil Nadu, India

Abstract
Leaf spring experiences frequent cyclic loading during working conditions. When design stage itself it is very essential to assess the fatigue life of the suspension system. It is important to consider and evaluate the key aspects of fatigue failure and life by using Finite Element Analysis (FEA) techniques to overcome these failures. This paper serves to stimulate the premature failure of the existing and proposed bracket model with generalized force elements under dynamic load conditions. Scanning Electron Microscope (SEM) was used to identify the bracket failure prone areas which indicate that the cyclic load in the suspension system is caused by rural area road-induced vibrations and bumps. This contributes to the increase of the fatigue fracture, which ends up with a bracket failure. The results indicated that the fatigue life of existing bracket is low for rough road conditions; the modified bracket has been optimized for the safe load conditions of the heavy vehicle suspension system.

Author Keywords
bracket; Fatigue failure; finite element analysis; SEM; suspension system

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2-s2.0-85095847271

70) Karthik, V.[a] , Selvakumar, P.[b] , Sivarajasekar, N.[c] , Megavarshini, P.[a] , Brinda, N.[a] , Kiruthika, J.[a] , Balasubramani, K.[d] , Ahamad, T.[e] , Naushad, M.[e]

Comparative and Equilibrium Studies on Anionic and Cationic Dyes Removal by Nano-Alumina-Doped Catechol Formaldehyde Composite
(2020) *Journal of Chemistry*, 2020, art. no. 7617989, . Cited 20 times.

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[a] Department of Industrial Biotechnology, Government College of Technology, Coimbatore, 641013, TN, India
[b] Department of Chemical Engineering, School of Mechanical, Chemical and Materials Engineering, Adama Science and Technology University, Adama, 1888, Ethiopia
[c] Laboratory for Bioremediation Research, Unit Operations Laboratory, Department of Biotechnology, Kumaraguru College of Technology, Coimbatore,TN, India
[d] Department of Petrochemical Engineering, Jct College of Engineering and Technology, Coimbatore, Tn, India
[e] Department of Chemistry, College of Science, King Saud University, Riyadh, Saudi Arabia

Abstract
Nano-alumina-doped catechol formaldehyde polymeric composite was prepared, characterized, and applied as an adsorbent for the removal of an anionic dye Congo red (CR) and a cationic dye SafraninO (SF), by adsorption process especially from aqueous solutions. Characterizations such as particle size distribution, zeta potential, BET, FTIR, and FESEM-EDAX were carried out for the adsorbent prepared. All experiments were conducted at the batch condition to study the effects of initial dye concentration (CR: 30-90 mg/L and SF: 10-50 mg/L), pH (2-11), temperature (25-55°C), and adsorbent dosage (0.05-0.3 g) on dye removal. The isotherm models (Langmuir, Freundlich, and Temkin) were analyzed for this adsorption work. The kinetic data obtained were analyzed by the pseudo-first-order, pseudo-second-order, Bangham, and Chien-Clayton equations. Dyes adsorption data were well fitted with the Freundlich isotherm equilibrium model and the pseudo-second-order kinetic model. Study results suggested that the nano-alumina-polymeric composite could be an effective adsorbent for anionic dye rather than cationic dye. © 2020 V. Karthik et al.

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71) Navaneethakannan, N., Sivanandi, P., Natarajan, V.M., Thanigachalam, M.

An investigation on sound analyzer effects in whirling of shaft apparatus
(2020) *Journal of the Balkan Tribological Association*, 26 (2), pp. 359-374.

Government College of Technology, Coimbatore, Tamil Nadu, India

Abstract
Signal processing technology represents a new technique for analysing sounds in mechanical structures. The sound analyser converts an information into signals for making the process effective. Current research has focussed on comparing the performance of sound analyser with accelerometer for analysing the rotating machinery, which integrates norm of residuals and damping ratio through power spectral density behaviour to enhance an accuracy of predicting the vibration. The aim of this investigation is to determine a method to extract vibrational fea-tures with increased performance. Sound analyser technology is to be processed by using MATLAB in this project. © 2020, Scibulcom Ltd.. All rights reserved.

Author Keywords
Accelerometer; Damping ratio; MATLAB; Norm of residuals; Power spectral density; Signal processing

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72) Bagavathi, C., Saraniya, O.

Statistical descriptors-based image classification of textural images
(2020) *Lecture Notes in Electrical Engineering*, 672, pp. 937-944.

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

Abstract
Texture investigation is a broad field of study with applications extending from remote sensing, satellite communication and autonomous systems to advanced systems such as robotics and machine learning. Textural images define the pattern of pixels spatially arranged, where a specific order can be used to identify and classify images. Human level analysis and classification of textural images have been challenged by current technical advancements with similar level of accuracy. Machines learn better when the images are more distorted and can even spot minute differences in parameters. Efficient classification of images is ensured if the parameter governing the decision is robust and exclusive. Statistical features extracted from textural images are learned through support vector machines, and the learned database is used with testing images to obtain the accuracy of image classification. © Springer Nature Singapore Pte Ltd 2020.

Author Keywords
Gray level co-occurrence matrix; Gray tone difference matrix; Image classification; Support vector machine; Texture images

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73) Sreeja, G., Saraniya, O.

Sum modified laplacian-based image fusion in dct domain with super resolution
(2020) *Lecture Notes in Electrical Engineering*, 672, pp. 945-953.

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

Abstract
Multi-focus image fusion in DCT domain are useful for Visual Sensor Network where the images have to be stored and transmitted in the encoded format. The drawbacks of existing DCT-based fusion methods are blurriness and blocking artifacts. In this paper, a novel multi-focus image fusion method is proposed by combining super resolution (SR) technique with the DCT. Single frame super resolution method is applied to the input images to avoid blocking artifacts. The contrast is chosen as a activity level measurement, and it is measured with SML. Based on the largest SML value, fusion is performed. The results obtained verify the efficiency of proposed scheme in terms of both subjective and quantitative analysis. © Springer Nature Singapore Pte Ltd 2020.

Author Keywords
Bicubic; Consistency verification; Discrete cosine transform; Multi-focus fusion; Sum modified laplacian

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74) Kala, R., Deepa, P.

Analysis of rician noise restoration using fuzzy membership function with median and trilateral filter in mri
(2020) *Lecture Notes in Electrical Engineering*, 672, pp. 803-816.

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

Abstract
Magnetic Resonance (MR) images are exaggerated with noise leads to the limitations in achieving better restoration results. So there is a need for developing efficient restoration algorithms in the medical images to avoid crucial problems for diagnosis and treatment of diseases. In this present work, a trilateral based fuzzy filter is developed for better restoration results. To preserve the structural information, edges trilateral based fuzzy trapezoidal membership function along with median filter has been used. The weights are obtained for the trilateral filter and median filter using fuzzy trapezoidal membership function. The weights are convoluted with the filtered image of the trilateral and median filter. The results obtained using this method are improved and it is analyzed with the simulated images and real images. The results are compared with the median, wiener, trilateral, fuzzy NLM with trapezoidal. © Springer Nature Singapore Pte Ltd 2020.

Author Keywords
Fuzzy trapezoidal membership function; Magnetic resonance imaging; Restoration; Rician noise; Trilateral filter

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75) Lakshmipathy, M.[a] , Chandrasekaran, M.[b] , Kulanthasamy, R.[c]

Enhanced adsorption of lead (II) ions from aqueous solution by a chemically modified polyurethane
(2020) *Acta Chimica Slovenica*, 67 (2), pp. 602-608. Cited 2 times.

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[a] Department of Civil Engineering, Government College of Technology, Coimbatore, Tamilnadu, 641013, India
[b] Department of Industrial Biotechnology, Government College of Technology, Coimbatore, Tamilnadu, 641013, India
[c] Department of Civil Engineering, Coimbatore Institute of Technology, Coimbatore, Tamilnadu, 641014, India

Abstract
Heavy metal pollution is a major threat to living systems due to increase in the industrial development worldwide. In this study, the adsorption of lead (II) ions by chemically modified polyurethane was reported. Polyurethane (PU) was chemically modified by sulphonation and chlorination to obtain sulphonated PU (SPU) and chlorinated PU (CPU). The adsorption parameters such as pH, contact time, adsorbent loading and initial metal ion concentration were optimized in batch experiments for both the adsorbents. Maximum Pb (II) ion adsorption of 90 and 85% was observed for SPU and CPU respectively at optimal conditions. Isotherms results showed that the equilibrium data was fitted with Freundlich isotherm and followed multilayer adsorption mechanism. Adsorption of Pb (II) ions by both SPU and CPU followed pseudo second order kinetics. The outcome of this study showed that chemical modification of PU is effective for efficient removal of Pb (II) ions from effluent.

Author Keywords
Chemical modification; Isotherm; Kinetics; Lead; Polyurethane

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76) Sithan, M.[a] , Singaram, J.[b]

Conversion of vegetable waste to lipid feedstock for biodiesel production aided with nano catalyst using rsm software
(2020) *Polish Journal of Environmental Studies*, 29 (6), pp. 4313-4320. Cited 1 time.

DOI: 10.15244/pjoes/113649

[a] Department of Civil Engineering, GCT, Coimbatore, Tamil Nadu, India
[b] Government College of Engineering, Theni, Bodi, Tamil Nadu, India

Abstract
Progress in economy leads to increases in society's energy requirement. Fossil fuel is the major source of fulfilling energy requirements. Biodiesel is an alternative for liquid fossil fuel. In this study, biodiesel was produced from lipid obtained from vegetable waste using oleaginous yeast. The pre-treated waste hydrolysate was used for the growth of oleaginous yeast, Lipomyces starkeyi which was able to yield a biomass concentration of 20 g/L. Obtained biomass was transesterified directly in the presence of Nanocatalysts calcium hydroxide and Aluminum oxide. The transesterification process was optimized by RSM software. The optimum ratio of Methanol to lipid was obtained as 6:1and catalyst concentration of 0.5%. Optimum temperature for biodiesel production was obtained as 60ºC. Maximum amount of biodiesel obtained as 8g/L which is worked out to be 40 % of the biomass used in this process. The oxidative stability of the obtained biodiesel was found out to be 1.84 years using biodiesel rancimat. Hence optimisation of process has yielded highly stable oil from microbial biomass grown from waste organic solids. The results of this study concluded that biodiesel can be obtained from biomass containing lipid by direct transesterification.

Author Keywords
Biodiesel; Lipid; RSM; Transesterification; Vegetable waste

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77) Kala, R., Deepa, P.

Segmentation of brain magnetic resonance images using deep learning classification and multi-modal composition
(2020) *Current Signal Transduction Therapy*, 15 (2), pp. 94-108. Cited 1 time.

DOI: 10.2174/1574362414666181220105908

Electronics and Communication Engineering, Government College of Technology, Coimbatore, Tamilnadu 641 013, India

Abstract
Background: Accurate detection of brain tumor and its severity is a challenging task in the medical field. So there is a need for developing brain tumor detecting algorithms and it is an emerging one for diagnosis, planning the treatment and outcome evaluation. Materials and Methods: Brain tumor segmentation method using deep learning classification and multi-modal composition has been developed using the deep convolutional neural networks. The different modalities of MRI such as T1, flair, T1C and T2 are given as input for the proposed method. The MR images from the different modalities are used in proportion to the information contents in the particular modality. The weights for the different modalities are calculated block-wise and the standard deviation of the block is taken as a proxy for the information content of the block. Then the convolution is performed between the input image of the T1, flair, T1C and T2 MR images and corresponding to the weight of the T1, flair, T1C, and T2 images. The convolution is summed between the different modalities of the MR images and its corresponding weight of the different modalities of the MR images to obtain a new composite image which is given as an input image to the deep convolutional neural network. The deep convolutional neural network performs segmentation through the different layers of CNN and different filter operations are performed in each layer to obtain the enhanced classification and segmented spatial consistency re-sults. The analysis of the proposed method shows that the discriminatory information from the different modalities is effectively combined to increase the overall accuracy of segmentation. Results: The proposed deep convolutional neural network for brain tumor segmentation method has been analysed by using the Brain Tumor Segmentation Challenge 2013 database (BRATS 2013). The complete, core and enhancing regions are validated with Dice Similarity Coefficient and Jaccard similarity index metric for the Challenge, Leaderboard, and Synthetic data set. To evaluate the classification rates, the metrics such as accuracy, precision, sensitivity, specificity, under-segmentation, incorrect segmentation and over segmentation also evaluated and compared with the existing methods. Experimental results exhibit a higher degree of precision in the segmentation compared to existing methods. Conclusion: In this work, deep convolution neural network with different modalities of MR image are used to detect the brain tumor. The new input image was created by convoluting the input image of the different modalities and their weights. The weights are determined using the standard deviation of the block. Segmentation accuracy is high with efficient appearance and spatial con-sistency. The assessment of segmented images is completely evaluated by using well-established metrics. In future, the proposed method will be considered and evaluated with other databases and the segmentation accuracy results should be analysed with the presence of different kind of noises. © 2020 Bentham Science Publishers.

Author Keywords
Brain tumor; Classification; Deep convolutional neural networks; Magnetic resonance image; Modali-ties; Segmentation

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78) Sharmila, G.[a] , Muthukumaran, C.[a] , Kumar, N.M.[b] , Sivakumar, V.M.[c] , Thirumarimurugan, M.[c]

Food waste valorization for biopolymer production
(2020) *Current Developments in Biotechnology and Bioengineering: Resource Recovery from Wastes*, pp. 233-249. Cited 27 times.

DOI: 10.1016/B978-0-444-64321-6.00012-4

[a] Department of Industrial Biotechnology, Government College of Technology, Coimbatore, Tamilnadu 641013, India
[b] Department of Genetic Engineering, School of Bioengineering, SRM Institute of Science and Technology, Kattankulathur, Tamilnadu 603203, India
[c] Department of Chemical Engineering, Coimbatore Institute of Technology, Coimbatore, Tamilnadu 641014, India

Abstract
Food wastage has become a growing crisis and contributes to the threatening food demand globally. According to the Food and Agriculture Organization (FAO) of the United Nations reported in the year 2013, one-third of the food produced around the world turned into waste, approximately around 1.6 billion tons annually. The improper production, preparation, and consumption of food are the main causes of food waste and because of that there is a rise in pollution problem in the environment and additionally a tremendous loss of vital nutrients and biomass. As food wastage is an alarming problem all over the world, there is increasing attention from environmental conservationists to turn food waste into useful renewable and recyclable products such as biofuels, biopolymers, and other energy sources. The majority of the food waste source comprises vegetable and fruits, as they are perishable and more prone to putrefaction and contamination. Hence, carbohydrates, sugars, hemicelluloses, lignin, and cellulose are the major components available abundantly in food waste. Cellulose, starch, hemicelluloses, and lignin possess a strong fibrous structure and are more applicable in the biosynthesis of biopolymers. Biopolymers are the polymers that are synthesized from biological substances modified by living organisms. As biopolymers are biodegradable and recyclable, they possess tremendous application in the field of biomedical, surgical sutures and materials, food packing, medicine and pharmaceutical preparations. This chapter explains the importance of biopolymers and methodologies carried out so far in turning food waste into biodegradable and recyclable biopolymer production.

Author Keywords
Biodegradable; Biopolymers; Food waste; Valorization

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79) Vadivel, A.[a] , Periyasamy, S.[b]

Experimental Investigation of Thermal Barrier (8YSZ-MGO-TIO2) Coated Piston used in Diesel Engine
(2020) *Journal of Applied Fluid Mechanics*, 13 (4), pp. 1157-1165. Cited 16 times.

DOI: 10.36884/jafm.13.04.30825

[a] Department of Mechanical Engineering, Sri Ramakrishna Engineering College, Coimbatore, Tamilnadu 641022, India
[b] Department of Mechanical Engineering, Government College of Technology, Coimbatore, Tamilnadu 641013, India

Abstract
A single cylinder diesel engine was tested under different loading conditions with its piston crown coated with the Thermal Barrier Coating (TBC). The main objective of this work is to investigate the effect of the TBC on performance and emission characteristics in the diesel engine. The top surface of the piston was coated with 100 μm thick NiCrAl as lining layer by plasma spray method. A mixture of 88% Yttria stabilized Zirconia, 4% MgO and 8% TiO2 of 150 μm thick were coated over the lining layer. Exhaust emission (HC, NOx, CO and CO2) parameters were investigated using AVL exhaust gas analyzer. The results showed that the brake thermal efficiency was increased by 10% and brake specific fuel consumption was decreased by 9.8% for coated piston in comparison with the uncoated piston engine. It was also observed that, smoke, CO and HC emissions were decreased in the TBC engine as compared with the baseline engine. In addition carbon di oxide (CO2) and nitrogen oxide (NOx) emissions were partially increased.

Author Keywords
Emission; Yttria stabilized zirconia Thermal barrier coating Diesel engine Piston crown Plasma spray

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80) Nagarajan, D.[a] , Rajagopal, T.[a] , Meyappan, N.[b]

A Comparative Study on Prediction Models for Strength Properties of LWA Concrete Using Artificial Neural Network
(2020) *Revista de la Construccion*, 19 (1), pp. 103-111. Cited 14 times.

DOI: 10.7764/RDLC.19.1.103-111

[a] Government College of Technology, Department of Civil Engineering, Coimbatore, India
[b] Easwari Engineering College, Department of Civil Engineering, Chennai, India

Abstract
In this study, Artificial Neural Network (ANN) model is constructed to predict the compressive strength, split tensile strength and flexural strength of lightweight aggregate concrete made of sintered fly ash aggregate. An empirical relationship between the compressive strength, split tensile strength, and flexural strength was developed and compared with that of experimental results. The models were formulated based on results obtained from laboratory experiments. The variables considered in the study are the quantity of cement and water-cement ratio. Feed forward neural network and Levenberg-Marquardt back propagation algorithm were used for training algorithm in ANN. Amongst the total data, approximately 70% of the data was considered for training, 15% for testing and the remaining 15% has been considered for validation. The developed models had more accuracy with minimum error and had a higher correlation with the correlation coefficients of 0.916 and 0.955 were obtained for the training and testing data of compressive strength prediction, 0.949 and 0.937 respectively for split tensile strength prediction, 0.926 and 0.928 respectively for prediction of flexural strength. The models were compared with the experimental data's, and the results were discussed.

Author Keywords
algorithm; ANN; regression; Sintered Fly ash aggregate; variables

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81) Divyah, N.[a] , Thenmozhi, R.[a] , Neelamegam, M.[b]

Strength properties and durability aspects of sintered-fly-ash lightweight aggregate concrete
(2020) *Materiali in Tehnologije*, 54 (3), pp. 301-310. Cited 10 times.

DOI: 10.17222/MIT.2019.101

[a] Department of Civil Engineering, Government College of Technology, Coimbatore, Tamil Nadu, 641013, India
[b] Department of Civil Engineering, Easwari Engineering College, Chennai, 600089, India

Abstract
The effect of basalt fibre on concrete made with sintered-fly-ash aggregates as coarse aggregates, a by-product of the processing of fly ash is studied in detail with respect to its strength, durability and cost effectiveness and compared with normal aggregate concrete. Four different mixes were developed for the M25, M30 and M40 grades of concrete with 0.25 % of basalt fibre in each mix. The rebound hammer test, ultrasonic pulse velocity, compressive strength, split tensile strength, flexural strength, Young's modulus, sorptivity and ponding test were investigated and a stress-strain curve was plotted. A linear-regression analysis was carried out to find the relationship between the mechanical properties of the concrete. A cost analysis worked to find the cost effectives of using the sintered-fly-ash aggregate. The findings indicated that the addition of basalt fibre showed a marginal increase in the compressive strength and a substantial increase in the split tensile strength and flexural strength was observed. The Young's modulus of the sintered-fly-ash aggregate concrete was low when compared with the conventional mix. The sorptivity test and the ponding test revealed that the sintered-fly-ash aggregate concrete showed a considerable decrease in durability. The outcome of the cost analysis showed that the use of sintered-fly-ash aggregate concrete reduced the cost by 12 % when compared with conventional route. The experimental test results throw light on the use of sintered-fly-ash aggreagte in concrete and basalt fibre proves the effectiveness of the lightweight concrete developed.

Author Keywords
Durability; Empirical equations; Non-destructive testing; Stress-strain

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82) Bharathidasan, B.[a] , Thirugnanam, G.[b]

Multiwavelet Based Unmanned Aerial Vehicle Thermal Image Fusion for Surveillance and Target Location
(2020) *Communications in Computer and Information Science*, 1244 CCIS, pp. 352-361.

DOI: 10.1007/978-981-15-6634-9_32

[a] Department of Electronics and Instrumentation Engineering, Annamalai University, Chidambaram, India
[b] Department of Electronics and Communication Engineering, Government College of Technology, Coimbatore, India

Abstract
A novel image fusion method in multiwavelet domain is proposed in this paper. The special frequency band and property of image in multiwavelet domain are employed for the image fusion algorithm. Due to the widespread use of digital media applications, multimedia refuge and the fusing has grown incredible important. Here in this research work, a low resolution multispectral and high resolution RGB image fused here is he new method to fuse that is proposed, to find out the armed person behind deep forest with surrounding trees. The picture is acquired from a wing which is new unmanned aerial vehicle (UAV) at 90 to 100 m distance in dark light surroundings. The combined effect of the texture resolution by a heavy decree RGB image and the thermal image taken by Dual Sensor Night Vision Goggle (DSNVG), to retrieve a fused IR RGB-thermal good image of the armed person. Inside this research work, The DSNVG is in construction to offer fusion of thermal imagery, to afford the profit of larger positional alertness due to developed risk discovery underneath nearly all battlefield outsides, like-minded with established bludgeon structure ranges, prolonged performance potential from high-light circumstances to sum dusk and through battlefield obstacles, increasing ability for municipal work. Here, Multiwavelet transform is being compared with wavelet packet for aerial vehicle fusion. In this work concludes that multiwavelet performs better than wavelet packet. © 2020, Springer Nature Singapore Pte Ltd.

Author Keywords
Image fusion; Multiwavelet transform; Wavelet packet transform

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

Predictive sliding mode controller for continuous bio-fermenter systems
(2020) *Control Engineering and Applied Informatics*, 22 (2), pp. 33-42. Cited 1 time.

[a] PSG college of Technology, Coimbatore, Tamilnadu, 641004, India
[b] Government College of Technology, Coimbatore, Tamilnadu, 641013, India

Abstract
Model predictive controller predicts the system performance and accordingly improves the controller performance. So it works well for time delayed systems. But the problem is that, it is not robust under certain cases. Sliding mode controller is robust but with a very slow response rate. Its limitation is its delay handling capacity. In this paper, a predictive controller with good delay handling capability is combined with robust sliding mode controller. It is found to have a quick rise time and settling time with minimum overshoot. It is more robust and produced no offset, or oscillation. In this work, predictive sliding mode control is designed for cylindrical, conical and cylindroconical bio-fermenter systems and their performances are analysed. The controller is implemented in real time for a cylindrical system and a conical system and it is found that the controller could handle delays and is also robust to parameter variations. © 2020 Control Engineering and Applied Informatics Journal.

Author Keywords
Lyapunov stability; Non minimum phase system; Predictive Control; Robustness; Sliding mode control

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84) Jaganathan, S.[a] , Ranjithkumar, K.[b] , Sathiyanathan, M.[c] , Sasikumar, C.[d]

Enhancement of voltage profile of power line by the placement of multi-line FACTS devices
(2020) *Journal of Advanced Research in Dynamical and Control Systems*, 12 (7), pp. 114-124. Cited 2 times.

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[a] Dept. of Electrical Electronics Engineering, Dr.N.G.P. Institute of Technology, Coimbatore, Tamilnadu, India
[b] Dept. of Electrical, Electronics Engineering, Government College of Technology, Coimbatore, Tamilnadu, India
[c] Dept. of Electrical Electronics Engineering, PSG Institute of Technology, Applied Research, Coimbatore, Tamilnadu, India
[d] Dept. of Electrical Electronics Engineering, Kumaraguru College of Technology, Coimbatore, Tamilnadu, India

Abstract
The Recent changes in power system networks are the introduction of deregulation, expansion planning, restructuring and optimal placement of Compensating devices. The enhancement of voltage profile and compensation is provided with FACTS devices in Transmission and Distributed Generation (DG) units at the sub-transmission and distribution levels. The Multiline FACTS devices are protagonist in maintaining the stability and reliability of power system networks, by providing compensation support and enhancing the voltage profile. However, the compensation is not appropriate, because of lag of identification of weak buses in transmission lines of power system. In this, the improvement of voltage profile can be achieved with placement of multiline FACTS devices. This proposed work, identify the suitable location and optimizes the capacity of multiline FACTS devices, which is implemented in simulation environment. In addition, the multiline FACTS devices results are compared with incorporating the placement of Unified Power flow Control method (UPFC) and validated. The proposed work is tested with IEEE 30 bus systems.

Author Keywords
Multiline Facts Devices; UPFC and Voltage Profile Enhancement

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85) Karthik, V.[a] , Kumar, P.S.[b] , Harsha Vardhan, K.[b] , Saravanan, K.[c] , Nithyakala, N.[a]

Adsorptive behaviour of surface tailored fungal biomass for the elimination of toxic dye from wastewater
(2020) *International Journal of Environmental Analytical Chemistry*, pp. 1-16. Cited 10 times.

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[a] Department of Industrial Biotechnology, Government College of Technology, Coimbatore, India
[b] Department of Chemical Engineering, SSN College of Engineering, Chennai, India
[c] Department of Chemical Engineering, Kongu Engineering College, Perundurai, India

Abstract
In the present research, adsorptive separation of Reactive Red-3 (RR3) from aqueous solution has been studied using surface tailored fungal biomass (Trichoderma harzianum). SEM with EDAX, XRD, FTIR and TG-DTA of the adsorbent had been discussed to verify the quality and efficiency of the adsorbent. The dye solution pH of 4, biosorbent dosage (0.5 g/L), contact time (150 min) and incubation temperature (40°C) for an initial dye concentration of 100 mg/L were predicted as an optimum condition for the highest removal of dye from aqueous solution. Among various kinetic models analysed, pseudo-second order model explains well the adsorptive cycle with a comprehensive relationship between experimental and measured biosorption capacity. Removal data was also analysed by using Langmuir, Dubinin–Radushkevich, Freundlich and Temkin isotherms. The process of biosorption was well described by Freundlich isotherm because of the higher correlation coefficient. The results of the models have been used to determine the ideal mechanism of the biosorption process. Langmuir sorption capacity was estimated as 172.63 mg/g at an optimum condition. Thermodynamic studies were also analysed to evaluate the parameters such as change in enthalpy (28.982 kJ/mol), change in Gibbs free energy and

change in entropy (116.56 J/mol K), which indicates that the biosorption process was spontaneous at all temperatures and endothermic in nature. The prepared material can be an alternative to the existing biosorbents. © 2020, © 2020 Informa UK Limited, trading as Taylor & Francis Group.

Author Keywords
biosorption; isotherm; kinetics; thermodynamics; Toxic dye; Trichoderma harzianum

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86) Mugilan, T., Alwarsamy, T.

Prediction of cutting forces during end milling using 3d fem based simulation analysis
(2020) *International Journal of Vehicle Structures and Systems*, 12 (1), pp. 26-30. Cited 4 times.

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Dept. of Engg. Design., Government College of Tech., Coimbatore, Tamil Nadu, India

Abstract
Material removal process for dies, moulds and additionally diverse aircraft parts can be made possible by the high-speed end milling operation. Devious cutting forces are created by the impact of various cutting parameters in course with high speed milling process. Due to this phenomenon the wear and chatter of tool can occur. Cutting force prediction is useful method to reduce the chatter occurrence during the machining of hardest materials. DEFORM 3D is an important simulation software which is used for the analysis of complicated metal removal processes. In this work, the tool insert was designed by Solid Works modelling software. The FEM simulation of high-speed end milling of Titanium-Vanadium based alloy was carried out in Deform 3D simulation software to obtain the cutting forces. The material behaviour was modelled with a classical constitutive material equation and was applied in the FEM code to predict the effective stress, strain, temperature and cutting forces towards the impact of cutting parameters. Analysis of variance is achieved to determine the impact of cutting forces with help of Taguchi method in Minitab-17. L16 orthogonal array was used to conduct the analysis of high speed end milling. © 2020. MechAero Foundation for Technical Research & Education Excellence.

Author Keywords
ANOVA; Cutting forces; Deform 3D; High speed end milling; Ti-6Al-4V

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2-s2.0-85087107392

87) Nandhini, N., Bhavani, R.

Feature extraction for diseased leaf image classification using machine learning
(2020) *2020 International Conference on Computer Communication and Informatics, ICCCI 2020*, art. no. 9104203, . Cited 23 times.

DOI: 10.1109/ICCCI48352.2020.9104203

Government College of Technology, Department of Computer Science and Engineering, Coimbatore, India

Abstract
Recognition algorithms for crop disease are based on the extraction from diseased plant leaf images of different types of features. Leaf diseases are important factors as they can lead to a significant reduction in agricultural crop quality and quantity. Therefore, detecting and understanding diseases is an important task. The approach to leaf image-based disease recognition consists of two steps: I extracting color and shape characteristics from lesion images; (ii) classifying diseased leaf images using machine learning approaches. This paper analyzes the efficiency of the classification performed using Support Vector Machine, K- Nearest Neighbor and Decision trees based on the extracted characteristics. © 2020 IEEE.

Author Keywords

Feature extraction; K-means clustering; Region segmentation

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88) Karthickkumar, S., Kumar, K.

A survey on Deep learning techniques for human action recognition
(2020) *2020 International Conference on Computer Communication and Informatics, ICCCI 2020*, art. no. 9104135, . Cited 6 times.

DOI: 10.1109/ICCCI48352.2020.9104135

Government College of Technology, Department of Computer Science and Engineering, Coimbatore, India

Abstract
Throughout recent years, deep learning with human action recognition has become one of the most popular research studies. It has a variety of applications such as automation, surveillance, health care tracking and study of consumer behaviour. Human behavior detection includes many difficulties in videos, including occlusions, camera movements, cluttered backgrounds, speed of execution, etc. In analyzes such as single point of view, multiple point of view, and RGB-Depth images, often three types of datasets are used. This paper presents a report on the three types of data sets for the identification of human action based on deep learning techniques. © 2020 IEEE.

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89) Jothi, D.H., Rajasenbagam, T.M.E.

Enhanced detection of internet water army based on supernetwork theory
(2020) *2020 International Conference on Computer Communication and Informatics, ICCCI 2020*, art. no. 9104079, . Cited 1 time.

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Government College of Technology, Computer Science and Engineering, Coimbatore, India

Abstract
The hierarchy and the correct nature of the Internet has been strongly contaminated by the advent of the Internet water armies in recent years. The minute and intense identification and detection of such Internet water armies is an important task. On the basis of the Supernetwork theory, a new model is proposed in this paper that will be employed in the detection of water armies. In this model, a Supernetwork consisting of five layers including User subnetwork, Content subnetwork, Psychological subnetwork, Negative keyword subnetwork and Repeated keywords subnetwork. Literature survey is carried out on the evolution of such spammers over years. The performance of the model is tested with the dataset obtained from the online communication platform, Reddit. A comparative analysis is presented from five existing models of Internet water army detection that were introduced in previous studies. © 2020 IEEE.

Author Keywords
Astroturfers identification; Feature measurement; Internet water armies detection; Machine learning classification; Social media; Supernetwork theory

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90) Beula Rani, B.J., Sumathi, L.M.E.

Survey on applying GAN for anomaly detection
(2020) *2020 International Conference on Computer Communication and Informatics, ICCCI 2020*, art. no. 9104046, . Cited 12 times.

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Government College of Technology, Computer Science and Engineering, Coimbatore, India

Abstract
In the current days, most prominent research in machine learning was focused on the generative models. Generative Adversarial Networks (GANs) is one of the generative models used to model the complex high dimensional distribution of real-world data. GANs have two structures, generator to create new data instances resembling our training data, and discriminator to distinguish real data from the data created by the generator. As predicting abnormal data is one of the most important problems across a range of domains. Our Literature survey was conducted on applications of GAN in the field of anomaly detection and a simple experiment is conducted illustrating the usage of GAN in anomaly detection using MNIST dataset. © 2020 IEEE.

Author Keywords
Anomaly detection; GAN; Neural Network

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91) Muhammad Irfan, A.A.[a] , Periyasamy, S.[b] , Gurusamy, A.[c]

Experimental Analysis of Hevea Brasiliensis Methyl Ester Diesel Blend with Antioxidant Additive in a Di-diesel Engine
(2020) *Lecture Notes in Mechanical Engineering*, pp. 91-100.

DOI: 10.1007/978-981-15-3631-1_10

[a] Department of Mechanical Engineering, Mohamed Sathak A J College of Engineering, Chennai, India
[b] Department of Mechanical Engineering, Government College of Technology, Coimbatore, India
[c] Department of Automobile Engineering, Pace Institute of Technology and Sciences, Ongole, India

Abstract
To replacing diesel fuel non-edible feedstock is a probable resource for the alternative fuel creation with taken into account of ecological and food versus fuel demand. Biodiesel is a capable replacement to diesel fuel, due to renewable, non-hazardous, transportable, widely existing, recyclable, ecological, and free from sulfur and aromatic matter. The experimental investigation was carried out, to investigate the response of Hevea brasiliensis methyl ester diesel blend with antioxidant additive in a di-diesel engine. The performance and emission characteristics were determined for the diesel engine powered with Hevea brasiliensis biodiesel blend. With an aid of ASTM standards, tert-butylhydroquinone (TBHQ) antioxidant added in biodiesel blend. The performance and emission distinctiveness were resolute for antioxidant additive added blend. The outcome of antioxidant additive on the performance and emission of diesel engine were analyzed and concluded with base fuel. The addition of antioxidant increased 8.9% average brake thermal efficiency, increased 4.98% average mechanical efficiency, and reduced 8.9% average brake specific fuel consumption. The addition of antioxidant reduced oxides of nitrogen (NOx) emission, but increased carbon monoxide (CO), carbon dioxide (CO2), and hydrocarbon (HC) emissions compared to Hevea brasiliensis biodiesel blend. © 2020, Springer Nature Singapore Pte Ltd.

Author Keywords
Antioxidant; Brake specific fuel consumption; Brake thermal efficiency; Emission characteristics; Hevea brasiliensis; Tert-butylhydroquinone; Transesterified

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92) Shamila Ebenezer, A.[a] , Rajsingh, E.B.[a] , Kaliaperumal, B.[b]

Support vector machine-based proactive fault-tolerant scheduling for grid computing environment
(2020) *International Journal of Advanced Intelligence Paradigms*, 16 (3-4), pp. 381-403. Cited 1 time.

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[a] Department of Computer Sciences Technology, Karunya University, Coimbatore, 641114, India
[b] Department of Electrical and Electronics Engineering, Government College of Technology, Coimbatore, 641013, India

Abstract
To classify the reliable resources accurately and perform a proactive fault tolerant scheduling in grid computing environment, a combination of support vector machine (SVM) with the quantum-behaved particle swarm optimization using Gaussian distributed local attractor point (GAQPSO) is proposed in this paper. When tuned with appropriate kernel parameters, the SVM classifier provides high accuracy in reliable resource prediction. The higher diversity of GAQPSO compared to other variants of QPSO, reduces the makespan of the schedule significantly. The performance of the SVM-GAQPSO scheduler is analysed in terms of the makespan, reliability, and accuracy. The empirical result shows that the reliability of the SVM-GAQPSO scheduler is 14% higher than the average reliability of the compared algorithms. Also, the accuracy of prediction using the SVM classifier is 92.55% and it is 37.2% high compared to classification and regression trees (CART), linear discriminant analysis (LDA), K-nearest neighbourhood (K-NN), and random forest (RF) algorithm. Copyright © 2020 Inderscience Enterprises Ltd.

Author Keywords
Failure data analytics; Grid computing; Particle swarm optimisation; Proactive fault tolerance; PSO; SVM classification algorithm

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93) Divyah, N.[a] , Thenmozhi, R.[a] , Neelamegam, M.[b]

Experimental and numerical analysis of battened built-up lightweight concrete encased composite columns subjected to axial cyclic loading
(2020) *Latin American Journal of Solids and Structures*, 17 (3), art. no. e259, . Cited 7 times.

DOI: 10.1590/1679-78255745

[a] Government College of Technology, Coimbatore, India
[b] Easwari Engineering College, Chennai, India

Abstract
In the recent era, built-up columns have been continuously used by the engineers in the design and analysis of tall buildings and bridges. Vibration analysis of these types of columns is essential to understand the failure modes of such columns. In that aspect, this study aims to analyze a concrete-encased built-up column made by configuring cold-formed steel angle sections connected by means of battens encased by normal weight and lightweight concrete with and without the inclusion of basalt fibre. Eight columns with battens were simulated, and it is encased with four different types of concrete and subjected to axial cyclic loading. The experimental results were correlated with the numerical investigation performed using FEA. The results indicated that the type of concrete dramatically influences the behaviour of columns. Higher ultimate strength and ductility was observed for all specimens, which is due to lower shear capacity of the battens. It was observed that the intensity of the axial cyclic load has a significant effect on the ultimate strength and deflection of columns, but it is less influential on the yield strength. It was concluded the results of experimental and FEA shows good compatibility between each other and depicts an error of 7.48%. © 2020.

Author Keywords
Basalt Fibre; Battened built-up Column; Deformation; FEA; Sintered Fly ash lightweight concrete; Strain Behaviour

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94) Veerasamy, V.[a] , Wahab, N.I.A.[a] , Ramachandran, R.[b] , Othman, M.L.[a] , Hizam, H.[a] , Irudayaraj, A.X.R.[a] , Guerrero, J.M.[c] , Kumar, J.S.[b]

A Hankel Matrix Based Reduced Order Model for Stability Analysis of Hybrid Power System Using PSO-GSA Optimized Cascade PI-PD Controller for Automatic Load Frequency Control
(2020) *IEEE Access*, 8, art. no. 9064500, pp. 71422-71446. Cited 102 times.

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[a] Department of Electrical and Electronics Engineering, Center for Advanced Lightning Power and Energy Research (ALPER), University Putra Malaysia (UPM), Seri Kembangan, 43400, Malaysia
[b] Department of Electrical and Electronics Engineering, Government College of Technology, Coimbatore, 641013, India
[c] Department of Energy Technology, Center for Research on Microgrids (CROM), Aalborg University, Aalborg, 9220, Denmark

Abstract
This paper presents the automatic load frequency control (ALFC) of two-area multisource hybrid power system (HPS). The interconnected HPS model consists of conventional and renewable energy sources operating in disparate combinations to balance the generation and load demand of the system. In the proffered work, the stability analysis of nonlinear dynamic HPS model was analyzed using the Hankel method of model order reduction. Also, an attempt was made to apply cascade proportional integral-proportional derivative (PI-PD) control for HPS. The gains of the controller were optimized by minimizing the integral absolute error (IAE) of area control error using particle swarm optimization-gravitational search algorithm (PSO-GSA) optimization technique. The performance of cascade control was compared with other classical controllers and the efficiency of this approach was studied for various cases of HPS model. The result shows that the cascade control produced better transient and steady state performances than those of the other classical controllers. The robustness analysis also reveals that the system overshoots/undershoots in frequency response pertaining to random change in wind power generation and load perturbations were significantly reduced by the proposed cascade control. In addition, the sensitivity analysis of the system was performed, with the variation in step load perturbation (SLP) of 1% to 5%, system loading and inertia of the system by ±25% of nominal values to prove the efficiency of the controller. Furthermore, to prove the efficiency of PSO-GSA tuned cascade control, the results were compared with other artificial intelligence (AI) methods presented in the literature. Further, the stability of the system was analyzed in frequency domain for different operating cases. © 2013 IEEE.

Author Keywords
Automatic load frequency control (ALFC); cascade control scheme (CCs); Hankel method; hybrid power system (HPS); particle swarm optimization-gravitational search algorithm (PSO-GSA); proportional integral-proportional derivative (PI-PD) control

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95) Devasahayam, A.[a] , Ramanujam, R.A.[b] , Ramasamy, S.[c]

Batch removal of Pb (II) from aqueous solution using activated carbon prepared from mangosteen shell activated with H2SO4
(2020) *Chiang Mai Journal of Science*, 47 (3), pp. 554-566. Cited 1 time.

[a] Department of Chemistry, Karpagam Institute of Technology, Coimbatore, 641105, India
[b] Department of Chemistry, Government College of Technology, Coimbatore, 641013, India
[c] Department of Electronics & Communication Engineering, CEG Campus, Anna University, Chennai, 600025, India

Abstract

Lead is a toxic pollutant which has serious effects on the environment and human health. In this work, an activated carbon was produced from Mangosteen shell (BTMC) and used in the elimination of Pb(II) from aqueous solution. The adsorbent was characterized by FT-IR, SEM and XRD studies. Batch experiments indicated that the quantitative removal Pb (II) occurs at an optimum experimental condition at pH 5 and carbon dose of 40 mg/100 mL. The maximum removal of Pb (II) was obtained at 27º C. Langmuir isotherm found to be applicable with Q0 value of 58.48 mg g-1. The results of the adsorption kinetics are described better with the pseudo-second-order model (R2= 1). The practical utility of the produced carbon was tested using lead battery wastewater. The recovery of the Pb (II) from mangosteen sheel is found to be 86% using 0.1 M HCl after five cycles. The results were compared with commercial activated carbon and BTMC is observed to be an efficient and economical adsorbent for the removal of Pb (II) ions from aqueous solution.

Author Keywords
Adsorption; Desorption; Isotherm; Lead; Mangosteen shell

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96) Vijayakumar, G.[a] , Maruthadurai, A.[b] , Paramasivam, R.[c] , Tamilavan, V.[d]

Investigation on Electrochemical Performance of New Flexible Nanocomposite Poly(Vinylidene Fluoride-co-Hexafluoropropylene) Polymer Electrolytes
(2020) *International Journal of Polymer Science*, 2020, art. no. 3583806, . Cited 4 times.

DOI: 10.1155/2020/3583806

[a] Department of Chemistry, Sree Sakthi Engineering College, Accredited by Naac, Affiliated to Anna University, Coimbatore, 641 104, India
[b] Department of Chemistry, Government College of Technology, Affiliated to Anna University, Coimbatore, 641013, India
[c] Department of Chemistry, School of Science and Language, VIT-AP University, Amaravathi, Andhra Pradesh, 522237, India
[d] Department of Physics, Pukyong National University, Busan, 608-737, South Korea

Abstract
This research paper as an article investigates electrochemical performance of poly(vinylidene fluoride-co-hexafluoropropylene) (PVdF-co-HFP) flexible nanocomposite polymer electrolytes which have been prepared successfully with incorporation of zinc oxide (ZnO) nanofiller. First, nanofillers are incorporated in a polymer matrix to form the flexible nanocomposite PVdF-co-HFP polymer membranes (PI-CMPM), and it is obtained by phase inversion technique. Contact angles of PI-CMPM have achieved a maximum of 136°. After this procedure, it has been activated by using a 1.0 M LiClO4 containing of DMC/EC (1: 1 v/v ratio) electrolyte solution to get flexible nanocomposite polymer electrolytes (PI-CMPE). The optimized PI-CMPM has increased the electrolyte uptake by 150%. It reaches the maximum ionic conductivity value of 2.47×10-3 S cm-1 at room temperature. Optimized PI-CMPE achieved a maximum transference number of 0.61, which may be further evidence for the ability to fabricate high-performance lithium ion polymer batteries.

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97) Rekha, K., Thenmozhi, R.

Characterisation and utilisation of sugarcane bagasse ash as pozzolanic material and its effect on mechanical strength of concrete
(2020) *Journal of Environmental Protection and Ecology*, 21 (1), pp. 268-279. Cited 5 times.

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

Abstract
This research paper studies the utilisation of the pozzolanic properties of Sugarcane bagasse ash (SCBA) which is

imperative in achieving its effective usage as replacement material for cement instead of disposing agro waste in landfills. Bagasse ash (BA) was prepared by undergone heat treatment process for 1 h under the combustion temperature of 600–700oC to achieve silica in amorphous phase.To characterise the material properties (physical and chemical) of BA and BA added concrete, EDAX, XRD, SEM, slump-cone, setting time and hardened properties were widely investigated. BA was added to concrete at various percentages as 0, 5, 10, 15 and 20 by cement weight. The compressive strength, split tensile strength, flexural strength and elastic modulus of concrete with adding 0.5% polycarboxylate ether-based super plasticiser were studied. The results obtained on 28th day were compared with reference samples and they revealed that the samples made of 15% pulverised SCBA showed an increased effect on strength properties and thereby it is promising that for civil engineering applications Sugarcane bagasse ash can be applied as a pozzolanic material with an acceptable strength.

Author Keywords
Mineral admixture; Physical and chemical properties; Strength characteristics; Sugarcane bagasse ash

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98) Praburanganathan, S., Chithra, S.

Synergy of waste glass powder and waste rubber: A research on loading, perseverance and morphological features of unburnt fly-ash-based masonry units
(2020) *Materiali in Tehnologije*, 54 (1), pp. 99-106. Cited 7 times.

DOI: 10.17222/mit.2019.142

Department of Civil Engineering, Government College of Technology, Coimbatore, 614013, India

Abstract
In the current context of the construction sector, the prospect and promotion of diverse industry and municipal waste-based materials are affianced to advance eco-friendly and more sustainable products. With this motto, the study aimed to investigate the synergistic effects of utilizing the crumb rubber from discarded waste tyres and finely ground glass powder from municipal waste glass in the production of unburnt bricks engaging a uniaxial pressing technique. The experiments conducted by mixing the rubber aggregates at 0-25 % with the stone dust and glass powders were blended with 0-25 % with the fly ash. The fly ash and stone dust volumes were fixed as 60 % and 25 %. The elemental composition of the raw materials and the morphology were studied using EDS and SEM. The physio-mechanical properties such as dry density, compressive strength, split tensile, modulus of rupture and perseverance studies such as water absorption, initial rate of absorption, capillary water-absorption coefficients using sorptivity study, efflorescence and direct UPV measurements evaluated and the results presented. In contrast to the earlier studies reported in the literature for the usage of rubber aggregates, the results of the current study reveal that the usage of rubber aggregates synergistic with glass powder enhance the compressive strength, split tensile and modulus of rupture of 2 %,11 % and 16 % for the substitute level of 10 % of both the waste materials. The better correlation observed in direct UPV Measurements with compressive strength. The density of the final developed products shows an 11 % reduced density for the optimum addition of both the materials leads to lightweight brick production. Saturated water absorption of the developed mixes were within the limits prescribed by Indian thresholds. The developed materials fulfill the requirement of Indian specifications to use as masonry units.

Author Keywords
Brick; Fly ash; Glass powder; Rubber

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99) Sangeetha, R.K.[a] , Ayyappan, S.[b]

Theoretical investigation of molecular structure, homo-lumo, hyperpolarizability, nbo analysis and density of states calculation of butenafine
(2020) *Digest Journal of Nanomaterials and Biostructures*, 15 (1), pp. 123-131. Cited 1 time.

[a] Department of Physics, Sri Eshwar College of Engineering, Coimbatore, India
[b] Department of Physics, Government College of Technology, Coimbatore, India

Abstract
Molecular geometry vibrational wave number of butenafine was investigated using HartreeFock and DFT method with HF and B3LYP/6-31+G(d,p) basis set. The potential energy distribution of the vibrational wave number is found to be in good agreement with experimental values. A detailed NBO analysis of butenafine was done with B3LYP method. U-V visible absorption spectra of the titled molecule is calculated by PCM model using water as solvent. The U-V visible spectra of the titled molecule dissolved in water were recorded in the range of 200-900 nm. The calculated values of U-V spectra are the most reproduced experimental data. The density of states, Homo-lumo and electrostatic potentials were calculated and analyzed. The dipole moment and hyperpolarizability result shows the butenafine has non linear optical properties. The natural bonding analysis was calculated by HF and B3LYP method. © 2020, S.C. Virtual Company of Phisics S.R.L. All rights reserved.

Author Keywords
DFT; HOMO-LUMO; Hyperpolarizability; MESP; NBO; UV-Visible

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100) Oorkalan, A.[a] , Chithra, S.[b]

Effect of coconut coir pith as partial substitute for river sand in eco-friendly concrete
(2020) *Materials Today: Proceedings*, 21, pp. 488-491. Cited 5 times.

DOI: 10.1016/j.matpr.2019.06.639

[a] Department of Civil Engineering, K. Ramakrishnan College of Technology, Trichy, Tamilnadu, 621112, India
[b] Department of Civil Engineering, Government College of Technology, Coimbatore, Tamilnadu, 641013, India

Abstract
India is one of the largest producers of coconut crop in the world. Coconut coir pith is an organic tiny particle obtained from coconut based industry and is of lignocellulosic nature. Disposal of coir pith by land filling poses severe environmental issues. On the other hand, limited availability of natural resources, namely, river sand and potable water is a major problem that cannot cater the increasing demands of construction industry. The present investigation explores the possible utilization of an agro waste, namely, raw and untreated coconut coir pith as partial substitute for natural sand in concrete under normal curing and self curing conditions. Tests were performed to determine the compressive strength, split tensile strength and flexural strength at various ages. SEM images were used to study the morphology of formed hydrates. High water absorption and retention capacity of coconut coir pith limits their use in concrete. Usage of coconut coir pith as sand replacement material can be a solution to maintain sustainable environment by the way of reduction in energy and non renewable resources. © 2019 Elsevier Ltd. All rights reserved.

Author Keywords
Coconut coir pith; Fly ash; Mechanical properties; Self-curing; SEM analysis

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101) Oorkalan, A.[a] , Chithra, S.[b] , Balaji, R.[a] , Ganesh Kumar, S.[a] , Kishore Kumar, J.[a] , Kishzore Kumar, T.[a]

Experimental study on high volume fly ash concrete made with coir pith and quarry dust
(2020) *Materials Today: Proceedings*, 21, pp. 833-836. Cited 12 times.

DOI: 10.1016/j.matpr.2019.07.588

[a] Department of Civil Engineering, K. Ramakrishnan College of Technology, Trichy, Tamilnadu, 621112, India

[b] Department of Civil Engineering, Government College of Technology, Coimbatore, Tamilnadu, 641013, India

Abstract
In India, construction industry plays a major role in building up nation's economy. For all the construction projects, approximately 60%-70% of cost has been spent on concrete. The annual consumption of concrete is about ten million tones. At the same time, abundant of fly ash has been thrown out as wastage. Fly ash, a by-product from the power plants, is effectively being used in the construction industry as an ecofriendly product. Concrete grade considered for this experimental study is M30 with 53 grade of Ordinary Portland Cement. About 50% and 75% cement was replaced by fly ash. Sand is replaced by the 5% of coir pith and 25%, 50% and 75% of quarry dust. IS method of mix design was adopted for obtaining required strength of concrete. Cubes (90), cylinders (90) and prism (60) were cast and cured. The cubes were tested for compressive strength on 7, 28 and 56 days. The cylinders were tested for split tensile strength on 7, 28 and 56 days. The prisms were tested for flexural strength on 28 and 56 days. The maximum strength is achieved in 5% coir pith and 75% quarry dust as replaced by the sand.

Author Keywords
Coconut coir pith; Fly ash; Mechanical properties; Quarry dust; Workability

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102) Devasahayam, A.[a] , Ramanujam, R.A.[b] , Ramasamy, S.[c]

Modified mangosteen shell in the removal of Hg (II) from aqueous solution-isotherm and kinetic studies
(2020) *Chiang Mai Journal of Science*, 47 (1), pp. 127-136. Cited 4 times.

[a] Department of Chemistry, Karpagam Institute of Technology, Coimbatore, 641013, India
[b] Department of Chemistry, Government College of Technology, Coimbatore, 641013, India
[c] Department of Electronics & Communication Engineering, CEG Campus, Anna University, Chennai, 600025, India

Abstract
An activated carbon was prepared from an agricultural waste mangosteen shell by chemical modification (BTMC) and removal efficiency was tested using aqueous solution of Hg (II). The functional groups and surface morphology of BTMC were analyzed using FT-IR and SEM studies. Commercial activated carbon (CAC) was used to compare the efficiency of BTMC in Hg (II) removal. Batch mode studies were conducted to evaluate the parameters like contact time, pH, carbon dose on the removal efficiency of Hg (II) from aqueous solution. Removal of mercury occurs at optimal contact time of 120 min at pH 5 and carbon dosage of 120 mg for BTMC. Adsorption isotherm was studied using Freundlich, Langmuir, and Temkin isotherm models. Equilibrium data fitted well with Langmuir isotherm. The maximum adsorption capacity of Hg (II) was found to be 49.75 mg g-1 for BTMC. The pseudo second-order kinetic model fits well with the experimental data. Wastewater analysis was also performed to evaluate the practical applicability of the carbon.

Author Keywords
Adsorption; Isotherm; Kinetics; Mangosteen shell; Mercury

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103) Manikandan, V.[a] , Petrila, I.[b] , Vigneselvan, S.[c] , Mane, R.S.[d] , Vasile, B.[e] , Dharmavarapu, R.[f] , Lundgaard, S.[f] , Juodkazis, S.[f] , Chandrasekaran, J.[g]

A reliable chemiresistive sensor of nickel-doped tin oxide (Ni-SnO2) for sensing carbon dioxide gas and humidity
(2020) *RSC Advances*, 10 (7), pp. 3796-3804. Cited 27 times.

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[a] Department of Physics, Kongunadu Arts and Science College, Coimbatore, 641 029, India
[b] Faculty of Automatic Control and Computer Engineering, Gheorghe Asachi Technical University, Iasi Str. Dimitrie Mangeron, Nr. 27, Iasi, 700050, Romania
[c] Department of Physics, Government College of Technology, Coimbatore, 641 013, India
[d] Center for Nanomaterial and Energy Devices, Swami Ramanand Teerth Marathwada University Dnyanteerth, Nanded, Vishnupuri, 431606, India
[e] University Politehnica of Bucharest Gh., Polizu Street No. 1-7, Bucharest, 011061, Romania
[f] Center of Micro-Photonics, Swinburne University of TechnologyVIC 3122, Australia
[g] Department of Physics, Sri Ramakrishna Mission Vidyalaya College of Arts and Science, Coimbatore, 641 020, India

Abstract
Herein, we report the chemiresistive gas and humidity sensing properties of pristine and nickel-doped tin oxide (Ni-SnO2) gas sensors prepared by a microwave-assisted wet chemical method. The structural and optical properties are characterised using X-ray diffraction, scanning electron microscopy, scanning transmission electron microscopy, ultraviolet spectroscopy, Fourier transform infrared spectroscopy, and X-ray photoelectron spectroscopy. The structural elucidation and morphology analyses confirm a particle size of 32-46 nm, tetragonal rutile crystal structure and small cauliflower-type surface appearance. Nickel doping can tune the structure of NPs and morphology. The tested carbon dioxide gas and humidity sensing properties reveal a rapid sensing performance with high-to-moderate sensitivity. Also, the materials favour gas sensing because their sensitivity is enhanced with the increase in nickel concentration. The sensing results suggest that nickel is a vibrant metal additive to increase the gas sensitivity of the sensor. However, nickel doping decreases the electron density and increases the oxygen vacancies. Ultimately, the gas sensor produces highly rapid sensing with a response time of 4 s. © 2020 The Royal Society of Chemistry.

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104) Nataraj, M.[a] , Thillikkani, S.[b]

Failure analysis of leaf spring suspension system for heavy load truck vehicle
(2020) *International Journal of Heavy Vehicle Systems*, 27 (1-2), pp. 1-17. Cited 14 times.

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[a] Department of Mechanical Engineering, Government College of Technology, Coimbatore, 641013, India
[b] Department of Mechanical Engineering, Rathinam Technical Campus, Coimbatore, 641021, India

Abstract
The failure of leaf spring suspension system used in heavy load truck vehicle TATA LPT 1613TCIC model was investigated in the research reported in this paper. In order to analyse the variations in the chemical composition, micro-structural analysis along with material specification has been performed. The failed leaf spring fractured part was analysed by using a visual inspection technique and scanning electron microscope (SEM) analysis. Based on the fractography study, it was inferred that the failure of the fractured part was due to the cyclic load. This load lead to fatigue growth on leaf spring of the model truck vehicle. Then finite element analysis of leaf spring was carried out to find out the root cause of the leaf spring suspension system. The failure parameters were also optimised for the truck vehicle during safe operation on the road. The fatigue life of the proposed leaf spring has increased in comparison with the existing model lifecycles. Copyright © 2020 Inderscience Enterprises Ltd.

Author Keywords
Fatigue life; Finite element analysis; Leaf spring; Scanning electron microscope; SEM

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

ASIC Implementation of Fixed-Point Iterative, Parallel, and Pipeline CORDIC Algorithm
(2020) *Advances in Intelligent Systems and Computing*, 1048, pp. 341-351. Cited 5 times.

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[a] VIT University, Vellore, India
[b] GCT Coimbatore, Coimbatore, TamilNadu, India

Abstract
In this paper, we proposed a Coordinate Rotation Digital Computer (CORDIC) algorithm for efficient hardware implementation of mathematical functions which can be carried out in a wide variety of ways for many digital signal processing applications. The CORDIC is a single unified algorithm for calculating many elementary functions such as trigonometric, hyperbolic, logarithmic function, exponential functions, multiplication, division, and so on. In this paper, a novel low power, low area, and high throughput fixed-point CORDIC algorithms are proposed. The standard CORDIC is also implemented for comparing the synthesis results. The proposed architecture scaling has been done using low area and low-power Scale Factor Correction Unit (SFCU). A low ADP SQRT-CSLA based ADD/SUB unit is proposed to overcomed the disadvantages of the basic ADD/SUB unit used in the standard CORDIC. The ROM lookup table size is also reduced to half. Extensive simulations are performed to verify the functionality. The standard and proposed CORDIC architectures are simulated in cadence NC launch and synthesized in cadence RC tool using TSMC GPDK 45 nm technology and area, power, and delay are calculated. The area and power consumption of the proposed CORDIC architecture are less when compared with standard CORDIC design. © 2020, Springer Nature Singapore Pte Ltd.

Author Keywords
CORDIC algorithm; Digital signal processing; Parallel; Pipeline

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106) Jayanthi Sree, S.[a] , Vasanthanayaki, C.[b]

Texture-Based Fuzzy Connectedness Algorithm for Fetal Ultrasound Image Segmentation for Biometric Measurements
(2020) *Advances in Intelligent Systems and Computing*, 1048, pp. 91-103. Cited 3 times.

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[a] Government College of Technology, Coimbatore, 641013, India
[b] Government College of Engineering, Salem, 636011, India

Abstract
Fuzzy connectedness segmentation approach guided by texture properties of the image is proposed for segmenting fetal organs such as femur, cranial bones, and abdomen from ultrasound images. This semiautomatic segmentation technique is proposed for fetal biometric measurements of biparietal diameter, head circumference, occipital diameter, femur length, and abdominal circumference. The texture information in the ultrasound images guides the fuzzy connectedness algorithm for efficient segmentation of fetal structures and thereby accurate biometric measurements. The proposed algorithm is compared with the manual segmentation of an expert and evaluation is performed with respect to region-based and distance-based metrics. The performance evaluation indicates that the proposed technique is comparable to manual segmentation results across all gestational ages. © 2020, Springer Nature Singapore Pte Ltd.

Author Keywords
Biometric measurements; Fetal; Fuzzy connectedness; Segmentation; Texture; Ultrasound

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107) Nirosha, B.[a] , Selvakumar, R.[a] , Jeyanthi, J.[b] , Vairam, S.[a c]

Elaeocarpus tectorius derived phosphorus-doped carbon as an electrode material for an asymmetric supercapacitor
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[a] Department of Chemistry, Government College of Technology, Coimbatore, 641013, India
[b] Centre of Excellence for Environmental Studies (COE-ES), Government College of Technology, Coimbatore, 641013, India
[c] Department of Chemistry, KPR Institute of Engineering and Technology, Coimbatore, 641407, India

Abstract
Phosphorus-doped porous carbon is prepared from a new biomass (Elaeocarpus tectorius) at three different temperatures using a facile H3PO4 activation approach. The physicochemical characterisation of the as-prepared carbons by X-ray diffraction, Raman spectroscopy, thermal analysis, scanning electron microscopy, N2 adsorption-desorption isotherms and X-ray photoelectron spectroscopy indicates that the carbon obtained at 900 °C possesses a high phosphorus content, 2.5% (by mass), and a large interlayer distance of the porous carbon with more expanded channels facilitating the penetration of ions into the interlayers and a rapid adsorption of ions suitable for ultra-high volumetric capacitance. The optimized carbon (900 °C) delivers high gravimetric capacitance (385 F g-1 at 0.2 A g-1) and volumetric capacitance (543 F cm-3 at 0.2 A g-1) in 1 M H2SO4. In 1 M Na2SO4 electrolyte, it still exhibits a gravimetric capacitance of 203 F g-1 at 0.3 A g-1 and a volumetric capacitance of 286 F cm-3 at 0.3 A g-1. Additionally, a coin cell asymmetric device fabricated using this carbon works in a wide potential window from 0 to 1.5 V with 96% capacitance retention in 1 M H2SO4 aqueous electrolyte for 1000 cycles and yields a high energy density of 27 W h kg-1, showing the utility for the development of wearable electronic devices. © 2019 The Royal Society of Chemistry and the Centre National de la Recherche Scientifique.

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108) Satheeshkumar, M.K.[a] , Kumar, E.R.[b] , Indhumathi, P.[c] , Srinivas, C.[d] , Deepty, M.[d] , Sathiyaraj, S.[e] , Suriyanarayanan, N.[f] , Sastry, D.L.[g]

Structural, morphological and magnetic properties of algae/CoFe2O4 and algae/Ag-Fe-O nanocomposites and their biomedical applications
(2020) *Inorganic Chemistry Communications*, 111, art. no. 107578, . Cited 23 times.

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[a] Department of Physics, SriGuru Institute of Technology, Coimbatore, Tamil Nadu 641110, India
[b] Department of Physics, Dr. N.G.P. Institute of Technology, Coimbatore, Tamil Nadu 641048, India
[c] Department of Chemistry, Shri Nehru Maha Vidyalaya College of Arts and Science, Coimbatore, Tamil Nadu 641050, India
[d] Department of Physics, Sasi Institute of Technology & Engineering, Tadepalligudem, Andhra Pradesh 534101, India
[e] Department of Chemistry, Dr. N.G.P. Arts and Science College, Coimbatore, Tamil Nadu 641048, India
[f] Department of Physics, Government College of Technology, Coimbatore, Tamil Nadu 641 013, India
[g] Department of Physics, Andhra University, Visakhapatnam, Andhra Pradesh 530003, India

Abstract
Algae-assisted auto-combustion method was adopted to prepare Algae/CoFe2O4 and Algae/Ag-Fe-O nanoparticles (NPs). Structural properties of the samples were investigated using XRD (X-ray Diffraction) FTIR (Fourier Transform Infra-red Spectroscopy), SEM (Scanning Electron Microscopy), and EDX (Energy Dispersive X-ray Analysis) and magnetic properties using VSM (Vibrating Sample Magnetometer). EDX spectra revealed the presence of expected stoichiometry in Algae/CoFe2O4 system but not in Algae/Ag-Fe-O. XRD patterns indicate the cubic phases of nanoparticles en-capsulated in the algae matrix. The sizes of the particles are found to be in the range of 15–21 nm. The room-temperature magnetic behaviour of the composites depends on the nature of dopant as Algae/CoFe2O4 NPs show ferromagnetic nature with significant coercivity whereas Algae/Ag-Fe-O NPs are super-paramagnetic. In-vitro anti-proliferative effect of Co-NPs and Ag-NPs at different concentrations (10, 25, 50, 75, 100 µg/ml) was evaluated against IMR 32 cell-line after 24 h incubation.

The result of MTT assay affirmed that the cell-line deteriorates showing higher toxicity caused by Ag-NPs as compared to the results observed with the Co-NPs. © 2019 Elsevier B.V.

Author Keywords
Biomedical applications; FE-SEM; Nanoparticles; Structural analysis

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109) Prakash, R.[a] , Thenmozhi, R.[b] , Raman, S.N.[c] , Subramanian, C.[a]

Fibre reinforced concrete containing waste coconut shell aggregate, fly ash and polypropylene fibre
(2020) *Revista Facultad de Ingenieria*, (94), pp. 33-42. Cited 45 times.

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[a] Department of Civil Engineering, Alagappa Chettiar Government College of Engineering and Technology, Near Kendriya Vidhyalaya, College Road, Karaikudi, Tamil Nadu, C. P. 630004, India
[b] Department of Civil Engineering, Government College of Technology, Thadagam Road, Coimbatore, Tamil Nadu, C. P. 641013, India
[c] Faculty of Engineering and Built Environment, Universiti Kebangsaan Malaysia UKM, Bangi, Selangor, C. P. 43600, Malaysia

Abstract
The aim of this study is to investigate the effect of polypropylene fibre addition into eco-concrete made with fly ash, an industrial by product, as partial cement replacement material, and coconut shell, an agricultural waste, as coarse aggregates, on the mechanical properties of the concrete. Two different mixes were developed, one with coconut shell only as coarse aggregates, and the other with the combination of both conventional aggregates and coconut shell as coarse aggregates. The cement content was replaced with class F fly ash at 10% by weight in the concrete mixes. The volume fractions of polypropylene fibres used in this study were 0.25%, 0.5%, 0.75% and 1.0%. The addition of polypropylene fibres slightly reduces the slump and density of coconut shell concrete. As the volume fraction of fibres increases, the compressive strength and modulus of elasticity of coconut shell concrete also increases by up to 0.5% of fibre volume fraction. The split tensile strength and flexural strength of coconut shell concrete were also enhanced with fibre addition. The addition of 0.75% and 1.0% volume fractions of polypropylene fibres slightly reduces compressive strength. Results of this study show that polypropylene fibres may be used in coconut shell concrete to improve the mechanical properties of the composite. © 2018 Revista Facultad de Ingenieria -redin.

Author Keywords
Agricultural wastes; Building materials; Concrete; Fibre; Sustainable development

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

Effect of copper substitution on structural, optical and humidity-sensing characteristics of cerium oxide nanoparticles
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[a] Department of Physics, Government College of Technology, Coimbatore, 641013, India
[b] Department of Physics, Kongunadu Arts and Science College, Coimbatore, 641 029, India
[c] Faculty of Automatic Control and Computer Engineering, Gheorghe Asachi Technical University of Iasi, Str. Dimitrie Mangeron, Nr. 27, Iasi, 700050, Romania

[d] Department of Physics, Sri Ramakrishna Mission Vidyalaya College of Arts & Science, Coimbatore, 641 020, India

Abstract
Cerium (pure) and copper-substituted cerium oxide nanoparticles were synthesized by microwave oven method. Powder X-ray diffraction showed that particle size was reduced with increases in copper content, termed the “particle size effect”. Scanning electron microscopy and transmission electron microscopy (TEM) images showed that particle formation was spherical. Miniature sizes of nanoparticles were in the range ~4–10 nm and were identified from typical TEM microstructures. Absorption peaks were reduced as result of copper content and binding energy was also reduced, which decreased the particle size. The particle size effect produced significant changes in humidity sensing, copper-substituted cerium oxide nanoparticles had better humidity-sensing behavior than pure cerium oxide. Reproducibility of the sensor produced notable sensing characteristics. © 2019 Elsevier Ltd

Author Keywords
Ceria nanoparticles; Humidity sensor; Optical properties; XRD

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