CRITERION 3 Research, Innovations and Extension	3.4 Research Publication and Awards
3.4.3: Number of research papers per teachers in the journal notified on UGC website during last five years	

RESEARCH PUBLICATIONS 2018

Document details - Face Spoofing Detection using Binary Gradient Orientation Pattern with Deep Neural Network

2017 9th International Conference on Advances in Pattern Recognition, ICAPR 2017

27 December 2018, Article number 8593022, Pages 251-256

9th International Conference on Advances in Pattern Recognition, ICAPR 2017; Indian Statistical Institute (ISI)Bangalore; India; 27 December 2017 through 30 December 2017; Category numberCFP1768F-ART; Code 144137

Face Spoofing Detection using Binary Gradient Orientation Pattern with Deep Neural Network(Conference Paper)

Beham, M.P., Roomi, S.M.M., Jebina, H., Kavitha, M.

[a]ECE Department, Sethu Institute of Technology, Madurai, Tamilnadu, India
[b]ECE Department, Thiagarajar College of Engineering, Madurai, Tamilnadu, India
[c]ECE Department, Vickram College of Engineering, Madurai, Tamilnadu, India

Abstract

One of the challenging tasks in biometric authentication system is face spoofing attack. This paper presents an efficient and compact binary pattern based on gradient orientation with deep neural network for face liveliness detection. To increase the discrimination power of the proposed feature, multi scale retinex (MSR) normalization technique has been applied on the raw face image. Gradients are computed from several orientations to obtain the essential gradient oriented binary patterns (BGOP) in the normalized face. Finally, we implement deep neural network to learn BGOP features of high discriminative ability in a supervised manner. Combining with the deep network, the proposed BGOP feature achieved good error detection rate on standard datasets. © 2017 IEEE.

Author keywords

BGOP | Deep Neural Network | Face liveliness detection | Spoofing attack

Indexed keywords

Engineering controlled terms: Face recognition

Engineering uncontrolled terms: BGOP | Binary gradients | Biometric authentication system | Discriminative ability | Face spoofing detections | Gradient orientations | Multi-scale Retinex | Spoofing attacks

Engineering main heading: Deep neural networks

ISBN: 978-153862241-4
Source Type: Conference Proceeding
Original language: English

DOI: 10.1109/ICAPR.2017.8593022
Document Type: Conference Paper
Publisher: Institute of Electrical and Electronics Engineers Inc.

Document details - Impact response and damage resistance behavior of GFRP/aluminium fiber metal laminates during low velocity impact test

Indian Journal of Engineering and Materials Sciences

Volume 25, Issue 6, December 2018, Pages 450-458

Impact response and damage resistance behavior of GFRP/aluminium fiber metal laminates during low velocity impact test(Article)

Asha Melba, V., Senthil Kumar, A.

Department of Mechanical Engineering, Sethu Institute of Technology, Kariapatti, 626 115, India

Abstract

Fiber metal laminates (FMLs) are widely used for aerospace applications. Impact response and damage resistance are the two important parameters to be considered for the effective use of FMLs. Glass fiber/epoxy-aluminium metal laminate (GEAML) is a class of FML prepared as a laminate with glass fiber mats and aluminium metal sheets staked in alternate layers with epoxy adhesive bonding. In this experimental work, woven fiber mats and chopped strand mats (CSM) of glass fiber were used along with aluminium sheets to prepare Woven based GEAML and CSM based GEAML respectively. Low velocity impact test was conducted as per ASTM standards using an instrumented falling weight impact testing machine on woven based GEAML and CSM based GEAML. For comparison, aluminum sheets of the same thickness were also subjected to low velocity impact test. The woven based GEAML withstood higher impact load and its absorbed energy is 3.4% higher than that of CSM based GEAML. The damage area and the depth of penetration of Woven based GEAML are much lower than that of CSM based GEAML and aluminum sheets. The woven based GEAML exhibited better impact response and damage resistance than CSM based GEAML and aluminum sheets. © 2018, National Institute of Science Communication and Information Resources (NISCAIR). All rights reserved.

Author keywords

Damage resistance and Impact behaviors | Drop weight Impact test | Energy absorption | Fiber metal laminate | GEAML | Low velocity impact

Indexed keywords

Engineering controlled terms: Adhesives | Aerospace applications | Aluminum sheet | ASTM standards | Energy absorption | Glass bonding | Glass fibers | Impact testing | Metals | Velocity | Weaving

Engineering uncontrolled terms: Drop weight impact | Fiber metal laminates | GEAML | Impact behavior | Low velocity impact

Engineering main heading: Fiber bonding

ISSN: 09714588
Source Type: Journal
Original language: English

Document Type: Article
Publisher: National Institute of Science Communication and Information Resources (NISCAIR)

Senthil Kumar, A.; Department of Mechanical Engineering, Sethu Institute of Technology, Kariapatti, India;

Document details - Access control scheme in cloud services based on different user roles

Informatologia

Volume 51, Issue 3-4, December 2018, Pages 182-188

Access control scheme in cloud services based on different user roles(Article) (Open Access)

Singaravelan, S., Arun, R., Shunmugam, D.A., Vivek, R.V., Murugan, D.

[a]Department of CSE, PSR Engineering College, Sivakasi, Tamilnadu, India
[b]Department of CSE, Sethu Institute of Technology, Pulloor ,Tamilnadu, India
[c]Department of CSE, Manonmaniam Sundaranar University, Tirunelveli, India

Abstract

The rapid development of computer technology, cloud-based services have become a hot topic. They not only provide users with convenience, but also bring many security issues, such as data sharing and privacy issue. In this paper, we present an access control system with privilege separation based on privacy protection (PS-ACS). In the PS-ACS scheme, we divide users into private domain (PRD) and public domain (PUD) logically. In PRD, to achieve read access permission and write access permission, we adopt the Key-Aggregate Encryption (KAE) and the Improved Attribute-based Signature (IABS) respectively. In PUD, we construct new multi-authority cipher text policy attribute-based encryption (CP-ABE) scheme with efficient decryption to avoid the issues of single point of failure and complicated key distribution, and design an efficient attribute revocation method for it. The analysis and simulation result show that our scheme is feasible and superior to protect users' privacy in cloud-based services. © 2018 Informatologia. All Rights Reserved.

ISSN: 13300067
CODEN: IORME
Source Type: Journal
Original language: English

DOI: 10.32914/i.51.3-4.6
Document Type: Article
Publisher: Croatian Communicologysts Association

SciVal Topic Prominence

Topic:

Prominence percentile:

Document details - An Efficient Encoder Architecture Design for Cognitive Radio Networks

Wireless Personal Communications

Volume 103, Issue 4, 1 December 2018, Pages 3181-3188

An Efficient Encoder Architecture Design for Cognitive Radio Networks(Article)

Abitha Kumari, D., Sutha, J.

[a]Faculty of Computer Science and Engineering, Sethu Institute of Technology, Virudhunagar, Tamilnadu, India
[b]Faculty of Computer Science and Engineering, AAA College of Engineering and Technology, Sivakasi, Tamilnadu, India

Abstract

Interference formation between received symbols in Cognitive Radio (CR) network system is the main problem which reduces the performance of the CR networks. In this paper, efficient encoder architecture for interference suppression is designed for low power applications in CR networks. The proposed architecture is imposed into various spartan processors to analyze the power consumption and current consumption. The proposed system architecture is analyzed in terms of power and current consumptions using Xilinx Project Navigator. © 2018, Springer Science+Business Media, LLC, part of Springer Nature.

Author keywords

Architecture | CR network | Interference | Low power | Performance

Indexed keywords

Engineering controlled terms: Architecture | Cognitive radio | Computer architecture | Low power electronics | Network coding | Wave interference

Engineering uncontrolled terms: Cognitive radio network | Current consumption | Encoder architecture | Low Power | Low power application | Performance | Proposed architectures | System architectures

Engineering main heading: Network architecture

ISSN: 09296212
CODEN: WPCOF
Source Type: Journal
Original language: English

DOI: 10.1007/s11277-018-6001-1
Document Type: Article
Publisher: Springer New York LLC

Abitha Kumari, D.; Faculty of Computer Science and Engineering, Sethu Institute of Technology, Virudhunagar, Tamilnadu, India;

Document details - Electrical, magnetic and structural properties of polymer-blended lanthanum-added nickel nano-ferrites

Ceramics International

Volume 44, Issue 17, 1 December 2018, Pages 21866-21873

Electrical, magnetic and structural properties of polymer-blended lanthanum-added nickel nano-ferrites(Article)

Lenin, N., Sakthipandi, K., Rajesh Kanna, R., Rajkumar, G.

[a]Department of Physics, Sethu Institute of Technology, Kariapatti, Tamil Nadu 626 115, India
[b]Department of Physics, Easwari Engineering College, Chennai, Tamil Nadu 600 089, India

Abstract

Polyvinyl alcohol (PVA)-blended $NiLa_xFe_{2-x}O_4$ (x = 0.01, 0.03, 0.05, 0.07 and 0.09) nano-ferrites were investigated through characterization studies such as powder X-ray diffraction (XRD) pattern, vibrating sample magnetometer graph, field emission scanning electron microscope (FESEM) images, and electrochemical impedance spectra. XRD pattern showed the presence of spinel cubic structure. A spherical-like morphology of PVA-blended nano-ferrites was identified from FESEM images and it was confirmed that the particle size of PVA-blended $NiLa_xFe_{2-x}O_4$ nano-ferrites was approximately 35 nm. An increase in dielectric constant and a decrease in loss tangent as a function of La^{3+} ions were noted in prepared nano-ferrites. Impedance analysis of PVA-blended $NiLa_xFe_{2-x}O_4$ nano-ferrites indicated resistive behavior. PVA-blended $NiLa_xFe_{2-x}O_4$ nano-ferrites showed a soft ferromagnetic nature. Further, saturation magnetization of PVA-blended $NiLa_xFe_{2-x}O_4$ nano-ferrites decreased while increases the content of La^{3+} ions.

Author keywords

Crystallite | Electrical properties | Impedance | Microwave | Nano-ferrites | Optical properties

Indexed keywords

Engineering controlled terms: Crystallites | Electric impedance | Electric properties | Ferrites | Lanthanum | Microwaves | Nickel | Nickel compounds | Optical properties | Particle size | Saturation magnetization | Scanning electron microscopy | X ray diffraction

Engineering uncontrolled terms: Characterization studies | Electrochemical impedance spectra | Field emission scanning electron microscopes | Nano-ferrites | Poly (vinyl alcohol) (PVA) | Powder X ray diffraction | Soft ferromagnetic | Vibrating sample magnetometer

Engineering main heading: Iron compounds

Funding details

Funding sponsor	Funding number	Acronym
Science and Engineering Research Board See opportunities by SERB	SR/FTP/PS-068/2014	SERB

Funding text

The author (K.S) is thankful to the Science and Engineering Research Board (Sanction no.: SR/FTP/PS-068/2014), New Delhi, for the financial support to carry out this research project.

Document details - A Swarm Intelligence Based Clustering Technique with Scheduling for the Amelioration of Lifetime in Sensor Networks

Wireless Personal Communications

Volume 103, Issue 4, 1 December 2018, Pages 3189-3207

A Swarm Intelligence Based Clustering Technique with Scheduling for the Amelioration of Lifetime in Sensor Networks(Article)

Guru Prakash, B., Sukumar, R., Balasubramanian, C.

[a]Department of Computer Science and Engineering, Sethu Institute of Technology, Pulloor, Kariapatti, Virudhunagar, Tamilnadu 626 115, India
[b]Department of Computer Science and Engineering, Kalaignar Karunanidhi Institute of Technology, Kannampalayam, Coimbatore, Tamilnadu 641 402, India
[c]Department of Computer science and Engineering, P.S.R. Engineering College, Sevalpatti, Sivakasi, Virudhunagar, Tamilnadu 626 140, India

Abstract

For regulating the physical phenomena, for example, temperature, humidity, vibrations, and seismic event set cetera; a wireless sensor network (WSN) encompasses different sensor nodes over a geological zone. A sensor node is a small device comprising of three fundamental parts: a system for sensing data, a system for processing, and a communication system that operates wirelessly. Energy effectiveness for WSN is considered as an important issue since sensor nodes have constrained batteries. In recent work several numbers of distributed scheduling algorithms are introduced to solve the energy efficient problem, however it doesn't increase network lifetime of the WSN. To solve this problem, artificial bee colony (ABC) based clustering with distributed scheduling is introduced here. The major objective of this work is to tradeoff between network lifetime and energy efficiency. In the main stage ABC based clustering is done to perceive the optimal target node in the all the cluster groups. This stage decreases the time utilization and upgrade the network lifetime. In the following phase distributed scheduling is performed to recognize the best cluster group. Therefore this approach is actualized in matrix laboratory and the results proved the efficiency of the examined approach when matched up with the ordinary methodologies. The results of the proposed ABC distributed scheduling clustering algorithm is measured in terms of energy, network lifetime, packet delivery ratio, throughput, and latency. © 2018, Springer Science+Business Media, LLC, part of Springer Nature.

Author keywords

Artificial bee colony (ABC) algorithm | Clustering | Distributed scheduling | Network life time | Wireless sensor network (WSN)

Indexed keywords

Engineering controlled terms: Energy efficiency | Optimization | Real time systems | Scheduling | Scheduling algorithms | Sensor nodes | Swarm intelligence | Wireless sensor networks

Engineering uncontrolled terms: Artificial bee colonies (ABC) | Artificial bee colony algorithms (ABC) | Clustering | Distributed scheduling | Distributed scheduling algorithms | Energy effectiveness | Network life time | Packet delivery ratio

Engineering main heading: Clustering algorithms

Document details - Doping effect of rare-earth (lanthanum, neodymium and gadolinium) ions on structural, optical, dielectric and magnetic properties of copper nanoferrites

Journal of Rare Earths

Volume 36, Issue 12, December 2018, Pages 1299-1309

Doping effect of rare-earth (lanthanum, neodymium and gadolinium) ions on structural, optical, dielectric and magnetic properties of copper nanoferrites(Article)

Rajesh Kanna, R., Sakthipandi, K., Seeni Mohamed Aliar Maraikkayar, S.M., Lenin, N., Sivabharathy, M.

[a]Department of Physics, Sethu Institute of Technology, Kariapatti, Tamil Nadu 626 115, India
[b]Department of Computer Science and Engineering, Sethu Institute of Technology, Kariapatti, Tamil Nadu 626 115, India

Abstract

Copper and rare earth-doped (RE = La, Gd, Nd) $CuFe_{1.85}RE_{0.15}O_4$ nanoferrites were prepared using the sonochemical method. The effective doping of rare-earth (La^{3+}, Nd^{3+}, Gd^{3+}) ions with copper nanoferrites was confirmed by X-ray diffraction. The tetrahedral and octahedral sites of the nanoferrites were identified through the Fourier transform infrared spectra. The doping of rare-earth elements enhances the optical bandgap energy of the nanoferrites that are observed through Ultraviolet–DRS spectra. The oxidation state of the elements Cu 2p, La 3d, Nd 3d, Gd 3d, Fe 2p and O 1s was analyzed. Scanning electron microscopy images indicate a spherical morphology with agglomeration to some elongate. The values of dielectric constant and conductivity decrease considerably due to doping rare-earth ions in copper nanoferrites. Low saturation magnetization and high coercivity values of rare earth-doped copper nanoferrites are observed from the typical hysteresis curves.

Author keywords

Dielectric response | Magnetic measurements | Nanoferrites | Optical properties | Rare earths

Indexed keywords

Engineering controlled terms: Coercive force | Copper | Gadolinium | Lanthanum | Magnetic variables measurement | Metal ions | Optical properties | Saturation magnetization | Scanning electron microscopy | Sonochemistry

Engineering uncontrolled terms: Dielectric and magnetic properties | Dielectric response | Fourier transform infrared spectra | Nano-ferrites | Optical band gap energy | Scanning electron microscopy image | Sonochemical method | Spherical morphologies

Engineering main heading: Rare earths

Funding details

Funding sponsor	Funding number	Acronym
Science and Engineering Research Board See opportunities by SERB	SR/FTP/PS-068/2014	SERB

Funding text

Document details - Molybdenum disulfide-based modifier for electrochemical detection of 4-nitrophenol

Ionics

Volume 24, Issue 12, 1 December 2018, Pages 4033-4041

Molybdenum disulfide-based modifier for electrochemical detection of 4-nitrophenol(Article)

Jeyapragasam, T., Meena Devi, J., Ganesh, V.

[a]Sethu Institute of Technology, Pulloor, Kariapatti, Tamilnadu 626115, India
[b]Centre for Nanotechnology & Advanced Biomaterials (CeNTAB) and School of Electrical & Electronics Engineering (SEEE), SASTRA Deemed University, Thanjavur, Tamilnadu 613401, India
[c]Electrodics and Electrocatalysis (EEC) Division, CSIR–Central Electrochemical, Research Institute (CSIR–CECRI), Karaikudi, Tamilnadu 630003, India

Abstract

We report the synthesis, characterization, and electrochemical sensing application of molybdenum disulfide (MoS_2) nanoparticles. The MoS_2 nanoparticles have been prepared by the gas-solid reaction method, and they have been characterized using different techniques such as transmission electron microscopy (TEM), X-ray diffraction (XRD), UV-Vis, photoluminescence, FTIR, Raman, and impedance spectroscopy. The electrocatalytic activity of MoS_2 nanoparticles towards the reduction of 4-nitrophenol (4-NP) has been studied using cyclic voltammetry. The experimental parameters such as the effect of scan rate and pH have been optimized for the electrochemical detection of 4-NP. The linear relationship between the peak current and the concentration of 4-nitrophenol was found to be in the range of 4×10^{-6} M to 2×10^{-8} M with an impressive detection limit of 10 nM. The performance of MoS_2-modified glassy carbon electrode towards 4-NP detection shows good stability, reproducibility with the recovery percentage of ~ 95%. The obtained results clearly indicate the potential application of MoS_2 nanoparticles for the selective and sensitive electrochemical detection of 4-NP.

Author keywords

4-Nitrophenol | Differential pulse voltammetry | Electrochemical sensor | Molybdenum disulfide

Indexed keywords

Engineering controlled terms: Chemical detection | Cyclic voltammetry | Electrochemical sensors | Fourier transform infrared spectroscopy | Glass membrane electrodes | High resolution transmission electron microscopy | Layered semiconductors | Nanoparticles | Sulfur compounds | Synthesis (chemical) | Transmission electron microscopy

Engineering uncontrolled terms: 4-Nitrophenol | Differential pulse voltammetry | Electrocatalytic activity | ELectrochemical detection | Electrochemical sensing | Experimental parameters | Modified glassy carbon electrode | Molybdenum disulfide

Engineering main heading: Molybdenum compounds

Funding details

Funding sponsor	Funding number	Acronym
Madurai Kamaraj University		MKU

Document details - Theoretical analysis of concentration of lactose hydrolysis in a packed bed reactor using immobilized β-galactosidase

Ain Shams Engineering Journal

Volume 9, Issue 4, December 2018, Pages 1507-1512

Theoretical analysis of concentration of lactose hydrolysis in a packed bed reactor using immobilized β-galactosidase(Article)(Open Access)

Kirthiga, O.M., Sivasankari, M., Vellaiammal, R., Rajendran, L.

[a]Department of Mathematics, Sethu Institute of Technology, Pullor, Kariapatti, 625116, India
[b]Department of Mathematics, Pasumpon Muthuramalinga Thevar College, Usilampatti, 625532, India

Abstract

A theoretical analysis of concentration of lactose hydrolysis in a packed bed reactor using immobilized β-galactosidase was discussed. The model is based on system of reaction diffusion equations containing a non-linear term related to Michalies-Menten kinetics of enzymatic reaction. In this paper, we obtained approximate analytical expressions for the concentrations of lactose and galactose for an isothermal reaction occurring under diffusive conditions in a packed bed tubular reactor containing immobilized enzyme using a new approach of homotopy perturbation method. The obtained analytical results were found to be in good agreement with the simulation results. © 2016 Ain Shams University

Author keywords

Immobilized enzyme | Lactose hydrolysis | Mathematical modeling | Michaelis–Menten kinetics

Indexed keywords

Engineering controlled terms: Chemical reactors | Enzymes | Hydrolysis | Linear equations | Mathematical models | Perturbation techniques | Reaction kinetics | Sugars

Engineering uncontrolled terms: Analytical results | Approximate analytical expressions | Homotopy Perturbation Method (HPM) | Immobilized enzyme | Isothermal reactions | Lactose Hydrolysis | Packed-bed tubular reactors | Reaction diffusion equations

Engineering main heading: Packed beds

ISSN: 20904479
Source Type: Journal
Original language: English
DOI: 10.1016/j.asej.2016.10.007
Document Type: Article
Publisher: Ain Shams University

Rajendran, L.; Department of Mathematics, Sethu Institute of Technology, Pullor, Kariapatti, India;

Document details - A reversible fluorescent chemosensor for the rapid detection of Hg²⁺ in an aqueous solution: Its logic gates behavior

Sensors and Actuators, B: Chemical

Volume 273, 10 November 2018, Pages 305-315

A reversible fluorescent chemosensor for the rapid detection of Hg^{2+} in an aqueous solution: Its logic gates behavior(Article)

Vinoth Kumar, G.G., Kesavan, M.P., Tamilselvi, A., Rajagopal, G., Raja, J.D., Sakthipandi, K., Rajesh, J., Sivaraman, G.

[a]Chemistry Research Centre, Mohamed Sathak Engineering College, Kilakarai, Tamil Nadu 623 806, India
[b]Department of Chemistry, Thiagarajar College, Madurai, Tamilnadu 625 009, India
[c]Department of Chemistry, Chikkanna Government Arts College, Tiruppur, Tamilnadu 641 602, India

View additional affiliations

Abstract

A new easily available "off-on-off" colorimetric and fluorescent probe (L) was synthesized and it displayed the selective detection towards Hg^{2+} in aqueous solution over other competing metal ions. In presence of Hg^{2+}, L showed the incredible color and fluorescent response. More interestingly, the color and fluorescence could be recovered upon the addition of EDTA into the L-Hg^{2+} solution. Moreover, this compound can be efficiently applied to molecular logic functions of OR, AND, NOR and NOT gates through the procured spectral results. Based on the reversible and reproducible switching process, we designed a molecular-scale sequential memory unit exhibits the "Writing-Reading-Erasing-Reading" and "Multi-write" activities in the form of binary logic. Density Functional Theory (DFT) calculations were theoretically supported the photo physical changes. Furthermore, the probe efficacy was studied by monitoring changes in intracellular Hg^{2+} ions in HeLa cells.

Author keywords

Live cell imaging | Logic gates | Mercury sensor | Probe | Turn-on fluorescence

Indexed keywords

Engineering controlled terms: Color | Colorimetry | Density functional theory | Fluorescence | Lanthanum compounds | Logic gates | Mercury compounds | Metal ions | Metals | Probes

Engineering uncontrolled terms: Fluorescent chemosensor | Fluorescent probes | Fluorescent response | Live-cell imaging | Mercury sensors | Monitoring change | Selective detection | Switching process

Engineering main heading: Computer circuits

Funding details

Funding sponsor	Funding number	Acronym
Science and Engineering Research Board See opportunities by SERB		SERB

Funding text

Document details - DEXSIT: A Benchmark Database for BMD Measurement and Analysis

Proceedings of the 4th International Conference on Biosignals, Images and Instrumentation, ICBSII 2018

5 November 2018, Article number 8524801

4th International Conference on Biosignals, Images and Instrumentation, ICBSII 2018; Chennai; India; 22 March 2018 through 24 March 2018; Category numberCFP18K33-ART; Code 142165

DEXSIT: A Benchmark Database for BMD Measurement and Analysis(Conference Paper)

Fathima, S.M.N., Tamilselvi, R., Beham, M.P.

Sethu Institute of Technology, Department of CSE, Tamilnadu, 626115, India

Abstract

In the medical field, a bone mineral density (BMD) test is presented as a picture of your bone health. The test determines the risk for bone fractures of a human. From the test report one can identify the symptoms of osteopenia or osteoporosis disease which is the most common type of bone disease. The most extensively renowned BMD test is called a Dual-Energy X-ray absorptiometry, or DEXA test. The test can measure bone mineral density at spine, left and right femur bones. Superior properties of DEXA compared to conventional methods unveil the potential for new medical applications among the researchers. Thus it is mandatory to have a standard DEXA database for the researchers so as to take the treatments to the advance level by properly analyzing the clinical results of the scan images. The proposed DEXA database, named as DEXSIT, represents an initial attempt to provide a set of DEXA scan images of Anteroposterior (AP) spine, dual left and right femur bones. The database interprets all the clinical details such as age, weight, height, BMD level, T-score, Z-score and area of the bone part. In addition to describing the details of the database, some specific performance evaluation measures have also been done as an effort to make research achieved with the database as consistent and comparable as possible. © 2018 IEEE.

Author keywords

BMD test | DEXA scan database | DEXSIT | Femur bone images | T-score and Z-score

Indexed keywords

Engineering controlled terms: Database systems | Medical applications | Testing

Engineering uncontrolled terms: Bone images | Conventional methods | DEXSIT | Dual energy x-ray absorptiometry | Measurement and analysis | Osteoporosis disease | Performance evaluations | Z-scores

Engineering main heading: Bone

ISBN: 978-153864473-7
Source Type: Conference Proceeding
Original language: English

DOI: 10.1109/ICBSII.2018.8524801
Document Type: Conference Paper
Publisher: Institute of Electrical and Electronics Engineers Inc.

Document details - Kinetic Mechanism for Modelling of Electrochemical Mediatedenzyme Reactions and Determination of Enzyme Kinetics Parameters

Russian Journal of Electrochemistry

Volume 54, Issue 11, 1 November 2018, Pages 783-795

Kinetic Mechanism for Modelling of Electrochemical Mediatedenzyme Reactions and Determination of Enzyme Kinetics Parameters(Article) (Open Access)

Kirthiga, O.M., Rajendran, L., Fernandez, C.

[a]Department of Mathematics, Sethu Institute of Technology, Kariapatti, 626115, India
[b]Department of Analytical Chemistry, School of Pharmacy and Life Sciences, Robert Gordon University, Aberdeen, United Kingdom

Abstract

The non-steady state current density for reversible electrochemical coupled with a homogeneous enzyme reaction and a constant potential is presented in this manuscript for the first time. The model is based on non-stationary diffusion equations with semi infinite boundary condition containing a nonlinear term related to the kinetics of an enzymatic reaction. The nonlinear differential equation for the mediator is solved for reversible homogeneous enzyme reaction. Approximate analytical expressions for the concentration of the mediator and corresponding current for non-steady state conditions are derived. Kinetic parameters are also determined such as Michaelis–Menten constants for substrate (K_{MS}) and mediator (K_{MM}) as well as catalytic rate constant (k_{cat}). Upon comparison, we found that the analytical results of this work are in excellent agreement with the numerical (Matlab program) and existing limiting case results. The significance of the analytical results has been demonstrated by suggesting two new graphical procedures for estimating the kinetic parameters from the current densities. © 2018, Pleiades Publishing, Ltd.

Author keywords

enzyme electrode | mathematical modelling | mediated enzyme reactions | non-linear reaction diffusion equations

Indexed keywords

Engineering controlled terms: Boundary conditions | Electrodes | Enzyme kinetics | Kinetic parameters | Linear equations | Mathematical models | MATLAB | Nonlinear equations | Partial differential equations | Rate constants

Engineering uncontrolled terms: Approximate analytical expressions | Constant Potential | Enzyme reaction | Infinite boundary condition | Non linear | Non-stationary diffusions | Non-steady-state conditions | Nonlinear differential equation

Engineering main heading: Enzyme electrodes

ISSN: 10231935
CODEN: RJELE
Source Type: Journal
Original language: English
DOI: 10.1134/S1023193518110034
Document Type: Article
Publisher: Pleiades Publishing

Document details - Literature Survey on Facial Expression Recognition Techniques

Proceedings of the 3rd International Conference on Communication and Electronics Systems, ICCES 2018

October 2018, Article number 8723953, Pages 137-142

3rd IEEE International Conference on Communication and Electronics Systems, ICCES 2018; Coimbatore; India; 15 October 2018 through 16 October 2018; Category numberCFP18AWO-ART; Code 148501

Literature Survey on Facial Expression Recognition Techniques(Conference Paper)

Rajeswari, G., IthayaRani, P.

[a]Department of CSE, Sree Sowdambika College of Engineering, Chettikurichi Aruppukottai, India
[b]Department of CSE, Sethu Institute of Technology, Kariapatti, India

Abstract

Now-a-days, Emotion recognition is a significant area in computer vision. It is computerized software that helps to identify human feelings such as Happiness, Anger, Sadness, Fear, Disgust, and Surprise. Moreover, emotion Recognition has its foothold on public places. Examples of human emotions on public place like severe argument between two persons, driving vehicle with anger and so on. By understanding emotion of the person, able to prevent any gruesome act or danger. In this paper, various techniques and databases used in recent papers are discussed for facial expression recognition. Many researchers are interested to do research in facial expression. Because by the Quote »One person could be judged by their reactions not by actions». Like that, person's mood can be easily identified by their emotions rather than their words. © 2018 IEEE.

Indexed keywords

Engineering controlled terms: Speech recognition

Engineering uncontrolled terms: Emotion recognition, Facial expression recognition, Facial Expressions, Human emotion, Human feelings, Literature survey, Public places

Engineering main heading: Face recognition

ISBN: 978-153864765-3
Source Type: Conference Proceeding
Original language: English

DOI: 10.1109/CESYS.2018.8723953
Document Type: Conference Paper
Publisher: Institute of Electrical and Electronics Engineers Inc.

Document details - Mechanical properties of concrete using coconut shells as coarse aggregates

ARPN Journal of Engineering and Applied Sciences

Volume 13, Issue 20, 1 October 2018, Pages 8236-8242

Mechanical properties of concrete using coconut shells as coarse aggregates(Article)

Kumutha, R., Vijai, K., Vijayragavan, S.

[a]Department of Civil Engineering, Sethu Institute of Technology, Pulloor, Virudhunagar, India
[b]Department of Civil Engineering, Sona College of Technology, Salem, India

Abstract

Due to rapid growth of population and industrialization, there is a need for need for tremendous growth in the infrastructure development. This leads to the depletion of natural resources because they are excavated at high rate. In that way natural resources available for construction materials are also being rapidly depleted which hikes the cost of these materials. Hence more focus is essential for finding out the alternative materials for construction. In the present study the focus was made on the coarse aggregates and an attempt was made to replace the conventional coarse aggregates using coconut shells in concrete. A control mix was designed for M 25 grade of concrete and then the crushed granite aggregates were replaced with coconut shells by volume in different levels such as 20%, 40%, 60%, 80% and 100%. The mechanical properties of concrete such as compressive strength, split tensile strength, and flexural strength were determined as per the relevant Indian standards. From the test results it was found that the properties of concrete decreased as the level of replacement of coconut shell aggregates increased. The density of concrete also decreases as the percentage of coconut shell is increased. The test results of this study showed that up to 40% replacement gave better strength. Hence the use of coconut shells up to 40% can be encouraged for field applications that help in protecting the environment, as well as producing the light weight concrete. © 2006-2018 Asian Research Publishing Network (ARPN).

Author keywords

Coarse aggregate | Coconut shell | Compressive strength | Concrete | Flexural strength | Split tensile strength

ISSN: 18196608
Source Type: Journal
Original language: English
Document Type: Article
Publisher: Asian Research Publishing Network

Kumutha, R.; Department of Civil Engineering, Sethu Institute of Technology, Pulloor, Virudhunagar, India;

SciVal Topic Prominence

Topic:

Prominence percentile:

Document details - Investigation on un-peened and laser shock peened dissimilar weldments of Inconel 600 and AISI 316L fabricated using activated-TIG welding technique

Journal of Manufacturing Processes

Volume 35, October 2018, Pages 466-478

Investigation on un-peened and laser shock peened dissimilar weldments of Inconel 600 and AISI 316L fabricated using activated-TIG welding technique(Article)

Chandrasekar, G., Kailasanathan, C., Vasundara, M.

[a]Department of Mechanical Engineering, PSNA College of Engineering and Technology, Dindigul, Tamilnadu 624 622, India
[b]Centre for Materials Research, Department of Mechanical Engineering, Sethu Institute of Technology, Virudhunagar District, Kariapatti, Tamilnadu 626 115, India

Abstract

The joining of Inconel 600 and AISI 316L plates using compound flux of 50% SiO_2 + 50% TiO_2 by activated tungsten inert gas (ATIG) welding process has been addressed in this article. The various mechanical and metallurgical studies were performed on the un-peened ATIG (UP-ATIG) dissimilar weldment. The results portrayed that the tensile failure of UP-ATIG weldment had occurred at the weld zone because of the presence of coarse grains and intermetallic phases. Laser shock peening (LSP) carried out on the UP-ATIG dissimilar weldment divulged that the laser peened ATIG (LP-ATIG) weldment possesses higher tensile strength (630.33 ± 28.02 MPa) than the UP-ATIG weldment (573.11 ± 41.11 MPa) due to the presence of compressive residual (CR) stresses induced by LSP. The residual stress measurements revealed that the UP-ATIG weldment possesses tensile residual (TR) stresses and the LP-ATIG weldment encompasses CR stresses in the weld zone. Potentiodynamic polarization test results show that the corrosion resistance of the LP-ATIG weldment is slightly higher (I_{corr} = 0.19 ± 0.02 mA/cm^2) than the UP-ATIG weldment (I_{corr} = 0.21 ± 0.05 mA/cm^2). © 2018

Author keywords

AISI 316L | Dissimilar welding | Inconel 600

Indexed keywords

Engineering controlled terms: Corrosion resistance | Inert gas welding | Inert gases | Silica | Tensile strength | Titanium dioxide | Welds

Engineering uncontrolled terms: Aisi 316l | Dissimilar welding | Dissimilar weldment | Inconel 600 | Intermetallic phasis | Laser shock peening | Potentiodynamic polarization tests | Tungsten inert gas

Engineering main heading: Gas welding

ISSN: 15266125
Source Type: Journal
Original language: English
DOI: 10.1016/j.jmapro.2018.09.004
Document Type: Article
Publisher: Elsevier Ltd

Document details - Performance analysis of solar still using sensible heat materials for saline water

Desalination and Water Treatment

Volume 125, September 2018, Pages 111-115

Performance analysis of solar still using sensible heat materials for saline water(Article)

Selvaraj, P., Manimaran, A., Nagaraj, G.

[a]Anna University, Tamil Nadu, India
[b]Vel Tech Dr. RR & Dr. SR University, Chennai, Tamilnadu, India
[c]Sethu Institute of Technology, Kariapatty, Tamilnadu, India

Abstract

Natural water resources are polluted in large extent that affects human and other living organisms. Therefore, water purification has gained an important attention in recent years. Among the various methods adopted for water purification, solar still is a device used to purify the saline and polluted water. Various sensible heat materials such as charcoal, pebbles and gravels are used in the solar still. These materials are used to increase the rate of evaporation and to enhance the performance of solar still. The experimental results proved that the sensible materials that were using the combination of charcoal with gravels resulted in high yield. From this experiment, the rate of discharge for combination of pebbles with gravels, pebbles with charcoal and gravels with charcoal are 200%, 240% and 290%, respectively. © 2018 Desalination Publications. All rights reserved.

Author keywords

Charcoal | Gravels | Pebbles | Sensible heat materials | Solar still

Indexed keywords

GEOBASE Subject Index: charcoal | experimental study | gravel | pebble | performance assessment | salinity | sensible heat flux | solar radiation | water treatment

ISSN: 19443994
Source Type: Journal
Original language: English
DOI: 10.5004/dwt.2018.22841
Document Type: Article
Publisher: Desalination Publications

Nagaraj, G.; Sethu Institute of Technology, Kariapatty, Tamilnadu, India;

SciVal Topic Prominence

Topic:

Prominence percentile:

Document details - Edge preserving image segmentation using spatially constrained EM algorithm

International Arab Journal of Information Technology

Volume 15, Issue 5, September 2018, Pages 927-933

Edge preserving image segmentation using spatially constrained EM algorithm(Article)

Meena Prakash, R., Ramapackiam, S.

[a]Department of Electronics and Communication Engineering, Sethu Institute of Technology, India
[b]Department of Electronics and Communication Engineering, Mepco Schlenk Engineering College, India

Abstract

In this paper, a new method for edge preserving image segmentation based on the Gaussian Mixture Model (GMM) is presented. The standard GMM considers each pixel as independent and does not incorporate the spatial relationship among the neighboring pixels. Hence segmentation is highly sensitive to noise. Traditional smoothing filters average the noise, but fail to preserve the edges. In the proposed method, a bilateral filter which employs two filters-domain filter and range filter, is applied to the image for edge preserving smoothing. Secondly, in the Expectation Maximization algorithm used to estimate the parameters of GMM, the posterior probability is weighted with the Gaussian kernel to incorporate the spatial relationship among the neighboring pixels. Thirdly, as an outcome of the proposed method, edge detection is also done on images with noise. Experimental results obtained by applying the proposed method on synthetic images and simulated brain images demonstrate the improved robustness and effectiveness of the method.

Author keywords

Bilateral filter | Expectation maximization | Gaussian mixture model | Image segmentation

ISSN: 16833198
Source Type: Journal
Original language: English
Document Type: Article
Publisher: Zarka Private University

SciVal Topic Prominence

Topic:

Prominence percentile:

Document details - A review of surface coating technology to increase the heat transfer

International Journal of Mechanical Engineering and Robotics Research

Volume 7, Issue 5, 1 September 2018, Pages 458-465

A review of surface coating technology to increase the heat transfer(Article)

Pungaiya, S., Kailasanathan, C.

[a]Department of Mechanical Engineering, Valliammai Engineering College, Chennai, Tamilnadu, India
[b]Department of Mechanical Engineering, Sethu Institute of Technology, Virudhunagar, Tamilnadu, India

Abstract

Heat dissipation is one of the paramount considerations in IC engine design. Loss of heat is encouraged only in an automobile to keep the engine safe. In this paper, a review of the current status of the research and technological development in the field of thermal spray coating process by utilization of Nanomaterials. Generally, the thermal spray concept is used for improving wear resistance, corrosion resistance, and thermal barrier properties of metals. However, no significant attempts have been made to improve thermal conductivity by thermal spray technology. This paper is focused on the limitation of existing heat transfer in Automobile radiator and how the thermal spray Nano coating will improve the heat transfer in an Automobile radiator. © 2018 Int. J. Mech. Eng. Rob. Res.

Author keywords

Heat transfer | Nano coating | Surface coating | Thermal spray

ISSN: 22780149
Source Type: Journal
Original language: English

DOI: 10.18178/ijmerr.7.5.458-465
Document Type: Article
Publisher: International Journal of Mechanical Engineering and Robotics Research

Pungaiya, S.; Department of Mechanical Engineering, Valliammai Engineering College, Chennai, Tamilnadu, India;

SciVal Topic Prominence

Topic:

Prominence percentile:

Document details - Ricinus communis fiber as potential reinforcement for lightweight polymer composites

Materials Research Express

Volume 5, Issue 9, September 2018, Article number 095307

Ricinus communis fiber as potential reinforcement for lightweight polymer composites(Article)

Nijandhan, K., Muralikannan, R., Venkatachalam, S.

[a]Department of Mechatronics, Bannari Amman Institute of Technology, Sathyamangalam, Tamil Nadu, India
[b]Department of Mechanical Engineering, Sethu Institute of Technology, Kariapatti, Tamil Nadu, India

Abstract

In this work, a natural fiber extracted from the barks of Ricinus communis plant has been demonstrated as a promising reinforcement for polymer composites. The natural fibers are principally composed of cellulose (65.5%) with a fraction of lignin (5.56%), as confirmed by chemical composition analysis and Fourier transform infrared spectroscopy. Such fibers were reinforced in polyester matrix by varying its orientations and content (by weight %) to form composite materials. The impact strengths of composite materials were tested as per the ASTM D256-06 standards and found the maximum value of 41.4 kJ m^{-2} for the composite having 40% of fiber content in longitudinal orientation. To establish structure-property relationship between the fiber and composites, fractography were studied using scanning electron microscopy. In fact, a rough surface of the fiber facilitates the mechanical interlocking with the polyester matrix. The results suggest that the Ricinus communis fiber reinforced composites are a potential lightweight and high strength material suitable for industrial applications. © 2018 IOP Publishing Ltd.

Author keywords

Fourier transform infrared spectroscopy | impact strength | mechanical Properties | Ricinus communis | scanning electron microscopy | Thermogravimetry analysis | x-ray diffraction

Indexed keywords

Engineering controlled terms: Chemical analysis | Fiber reinforced plastics | Fourier transform infrared spectroscopy | Fracture mechanics | Impact strength | Mechanical properties | Natural fibers | Reinforced plastics | Reinforcement | Thermogravimetric analysis | X ray diffraction

Engineering uncontrolled terms: Chemical composition analysis | Fiber reinforced composites | High-strength materials | Longitudinal orientation | Mechanical interlocking | Ricinus communis | Structure property relationships | Thermogravimetry analysis

Engineering main heading: Scanning electron microscopy

ISSN: 20531591
Source Type: Journal
Original language: English
DOI: 10.1088/2053-1591/aad617
Document Type: Article
Publisher: Institute of Physics Publishing

Document details - Analytical modeling of InSb/AlInSb heterostructure dual gate high electron mobility transistors

AEU - International Journal of Electronics and Communications

Volume 94, September 2018, Pages 19-25

Analytical modeling of InSb/AlInSb heterostructure dual gate high electron mobility transistors(Article)

Venish Kumar, T., Balamurugan, N.B.

[a]Department of ECE, Sethu Institute of Technology, India
[b]Department of ECE, Thiagarajar College of Engineering, India

Abstract

This paper presents an approximate solution of a 2D Poisson's equation within the channel region for Double-Gate AlInSb/InSb High Electron Mobility Transistors (DGHEMTs), using variable separation technique. The proposed model is used to obtain the surface potential, electric field, threshold voltage and drain current of both tied and separated gate bias conditions for Double-Gate AlInSb/InSb HEMTs. The surface potential and electric field are derived for both effective conduction paths of front and back heterointerface by a simple analytical expression and an analytical solution is verified with sentarus TCAD device simulator. © 2018 Elsevier GmbH

Author keywords

Double gate | Heterostructure | InSb/AlInSb | Variable separation technique

Indexed keywords

Engineering controlled terms: Drain current | Electric fields | Electron mobility | Heterojunctions | III-V semiconductors | Indium antimonides | Poisson equation | Separation | Surface potential | Threshold voltage

Engineering uncontrolled terms: Analytical expressions | Approximate solution | Conduction paths | Device simulators | Double gate | Hetero interfaces | InSb/AlInSb | Variable separation

Engineering main heading: High electron mobility transistors

ISSN: 14348411
Source Type: Journal
Original language: English
DOI: 10.1016/j.aeue.2018.06.033
Document Type: Article
Publisher: Elsevier GmbH

Balamurugan, N.B.; Department of ECE, Thiagarajar College of Engineering, India;

Prominence percentile:

Document details - The Influence of the Thickness and Areal Density on the Mechanical Properties of Carbon Fibre Reinforced Aluminium Laminates (CARAL)

Transactions of the Indian Institute of Metals

Volume 71, Issue 9, 1 September 2018, Pages 2165-2171

The Influence of the Thickness and Areal Density on the Mechanical Properties of Carbon Fibre Reinforced Aluminium Laminates (CARAL)(Article)

Rajan, B.M.C., Kumar, A.S.

Department of Mechanical Engineering, Sethu Institute of Technology, Pulloor, Tamilnadu 626 115, India

Abstract

A novel composite material consisting of a laminate of several thin aluminium sheets bonded with layers of carbon fibre mat/epoxy resin. Carbon fibre reinforced aluminium laminates (CARAL) offer specific advantageous properties such as better strength, fatigue, impact, corrosion resistance, fire resistance and weight savings. CARAL is a kind of fibre metal laminate system. In the present work, CARAL was prepared and experimental tests were conducted to evaluate the influence of the thickness and areal density on the mechanical properties of CARAL. Mechanical properties such as, the tensile strength and flexural strength of the laminates were increased with the increase in thickness and areal density. CARAL with four aluminium layers and three carbon fibre mat layers have superior strength than the laminates with lesser number of layers due to thickness of laminates and areal density. © 2018, The Indian Institute of Metals - IIM.

Author keywords

Areal density | CARAL | FML | Mechanical properties | Thickness

ISSN: 09722815
Source Type: Journal
Original language: English
DOI: 10.1007/s12666-018-1348-2
Document Type: Article
Publisher: Springer

Rajan, B.M.C.; Department of Mechanical Engineering, Sethu Institute of Technology, Pulloor, Tamilnadu, India;

SciVal Topic Prominence

Topic:

Prominence percentile:

Document details - Modified composite power control strategy for grid connected wind-PV systems with unbalanced nonlinear current

International Transactions on Electrical Energy Systems

Volume 28, Issue 9, September 2018, Article number e2587

Modified composite power control strategy for grid connected wind-PV systems with unbalanced nonlinear current(Article)

Sivakumar, P., Arutchelvi, M.S.

[a]Department of Electrical and Electronics Engineering, Rajalakshmi Engineering College Chennai, Thandalam, Tamil Nadu, India
[b]Department of Electrical and Electronics Engineering, Sethu Institute of Technology, Madurai, Tamil Nadu, India

Abstract

A new control algorithm for a grid connected inverter fed by hybrid photovoltaic (PV)-wind system model for unbalanced nonlinear load at point of common coupling (PCC) is proposed in this paper. The proposed modified composite power controller has an additional feature where the nonfundamental cross interactive component of the current is added to the fundamental for current reference generation for PV sourced inverter control. The proposed controller includes power, voltage, and current control loops in addition to a computed virtual nonfundamental admittance block. The power control loop maintains instantaneous power balance at the PCC and computes the nonfundamental virtual admittance required to effectively cancel the nonsinusoidal power components at the PCC. The voltage control loop computes the reactive current reference for the current control loops by incorporating the drops due to instantaneous sinusoidal and nonsinusoidal current waves. The current control loop regulates the average and suppresses oscillating power in a dual decoupled double synchronous reference frame to generate a modulating signal to the PV sourced inverter. Simulations are conducted for the proposed hybrid PV-IG scheme in different cases of unbalanced nonlinear load variations at the PCC in MATLAB and the performance of the proposed controller is compared with existing grid control direct power control and composite power controller schemes. The Spectrum Digital F28335 eZdsp board @150 MHz speed with IDE/tool chain Texas Instruments Code Composer Studio was used to implement the proposed controller model. Simulation and experimental results confirm the veracity of the developed model. Copyright © 2018 John Wiley & Sons, Ltd.

Author keywords

composite power control | deration factor | effective apparent power | nonlinear load | PV array | wind-driven induction generator

Indexed keywords

Engineering controlled terms: Asynchronous generators | Closed loop control systems | Controllers | Electric current control | Electric fault currents | Electric inverters | Electric power transmission networks | MATLAB | Photovoltaic cells | Power control

Engineering uncontrolled terms: Apparent power | Current reference generation | Deration factor | Double synchronous reference frame | Grid connected inverters | Nonlinear load | Point of common coupling | PV arrays

Engineering main heading: Electric power system control

ISSN: 20507038 DOI: 10.1002/etep.2587

Document details - Impact of alkali treatment on physico-chemical, thermal, structural and tensile properties of Carica papaya bark fibers

International Journal of Polymer Analysis and Characterization

Volume 23, Issue 6, 18 August 2018, Pages 529-536

Impact of alkali treatment on physico-chemical, thermal, structural and tensile properties of Carica papaya bark fibers(Article)

Saravanakumaar, A., Senthilkumar, A., Saravanakumar, S.S., Sanjay, M.R., Khan, A.

[a]Department of Mechanical Engineering, Sethu Institute of Technology, Virudhunagar, India
[b]Department of Mechanical Engineering, Kamaraj College of Engineering and Technology, Virudhunagar, India
[c]Department of Mechanical Engineering, Ramaiah Institute of Technology, Bangalore, India

View additional affiliations

Abstract

This study aims to examine the effect of sodium hydroxide (NaOH) treatment on the physico-chemical properties, structure, thermal, tensile and surface topography of Carica papaya fibers (CPFs). The surface of raw CPFs was modified by soaking with 5% NaOH solution for 15, 30, 45, 60, 75 and 90 min. The results of thermo-gravimetric analysis revealed that the optimum treatment time for alkali treatment was 60 min. It was found that the alkali treatment improved the properties of the CPFs. The results of TGA, FT-IR, XRD and AFM suggest that the treated CPF is a suitable alternative as reinforcement in polymer composites. © 2018, © 2018 Taylor & Francis Group, LLC.

Author keywords

Alkali treatment | FT-IR analysis | TGA analysis | thermogravimetric analysis | XRD analysis

Indexed keywords

Engineering controlled terms: Gravimetric analysis | Sodium hydroxide | Surface topography | X ray diffraction

Engineering uncontrolled terms: Alkali treatment | FTIR analysis | Physico-chemicals | Physicochemical property | Polymer composite | TGA analysis | Treatment time | XRD analysis

Engineering main heading: Thermogravimetric analysis

ISSN: 1023666X
Source Type: Journal
Original language: English
DOI: 10.1080/1023666X.2018.1501931
Document Type: Article
Publisher: Taylor and Francis Inc.

Saravanakumaar, A.; Department of Mechanical Engineering, Sethu Institute of Technology, Virudhunagar, Tamil Nadu, India;

Document details - Oxidative hydrothermal synthesis of Ce₂O₃-ZrO₂-Y₂O₃ nanocomposites and their photocatalytic and biological studies

Journal of Bionanoscience

Volume 12, Issue 4, August 2018, Pages 478-487

Oxidative hydrothermal synthesis of Ce_2O_3-ZrO_2-Y_2O_3 nanocomposites and their photocatalytic and biological studies(Article)

Fowziya, S.A., Mohideen, A.M.U., Arasu, M.V., Jahangir, A.R.M., Saleem, A.M., Ayeshamariam, A., Jayachandran, M.

[a]Research and Development Center, Bharathidasan University, Tiruchirappalli, 620024, India
[b]Department of Chemistry, Khadir Mohideen College, Adirampattinam, 614701, India
[c]Department of Botany and Microbiology, Addiriyah Department for Environmental Studies, College of Science, King Saud University, Riyadh, 11451, Saudi Arabia

View additional affiliations

Abstract

Cerium oxide alone acts as a promising catalyst for many oxidative reactions with nanocomposites of semiconducting oxides like cerium oxide (Ce_2O_3), zirconium oxide (ZrO_2) and yttrium oxide (Y_2O_3). Remarkable improvement in the chemical synthesis ($CeO2$-ZrO_2-Y_2O_3), markedly promoted not only structural, optical and morphological activities but also photocatalysis for Rhodamine B dye. Photocatalytic activity was analysed, and concentrated UV light was used for the degradation purposes. The crystal size was calculated for two different annealing steps of these samples, with values ranging from 38 nm to 45 nm. Bandgap by UV-Vis spectrometer was also measured in the range of 2.6 eV-3.2 eV, yielding good selectivity and stability. Degradation mechanism of these three samples matched well with the reported results. A series of characterization methods, such as X-ray diffraction (XRD), Scanning electron microscopy (SEM), High-resolution transmission electron microscopy (HR-TEM) measurements were used to study its composition, structure, morphology, and surface physicochemical properties.

Author keywords

Bacterial Activities | Ce_2O_3-ZrO_2-Y_2O_3 | Hydrothermal Method | Photocatalytic Studies

Indexed keywords

Engineering controlled terms: Cerium oxide | Degradation | High resolution transmission electron microscopy | Nanocomposites | Photocatalysis | Scanning electron microscopy | Yttrium oxide | Zirconia

Engineering uncontrolled terms: Bacterial activity | Characterization methods | Degradation mechanism | Hydrothermal methods | Photo-catalytic | Photocatalytic activities | Physicochemical property | ZrO2-Y2O3

Engineering main heading: Hydrothermal synthesis

ISSN: 15577910
Source Type: Journal
Original language: English
DOI: 10.1166/jbns.2018.1560
Document Type: Article
Publisher: American Scientific Publishers

Document details - Exploration of Ag decoration and Bi doping on the photocatalytic activity α-Fe₂O₃ under simulated solar light irradiation

Canadian Journal of Chemical Engineering

Volume 96, Issue 8, August 2018, Pages 1713-1722

Exploration of Ag decoration and Bi doping on the photocatalytic activity α-Fe_2O_3 under simulated solar light irradiation(Article)

Rajamohan, S., Kumaravel, V., Abdel-Wahab, A., Ayyadurai, S., Muthuramalingam, R.

[a]Department of Chemistry, Sethu Institute of Technology, Madurai, Tamil Nadu 626 115, India
[b]Chemical Engineering Program, Texas A&M University at Qatar, Doha, 23874, Qatar
[c]Post Graduate & Research Department of Chemistry, Thiagarajar College, Madurai, Tamil Nadu 625009, India

View additional affiliations

Abstract

In the present investigation, silver decorated and bismuth doped α-Fe_2O_3 (Ag/Bi-Fe_2O_3) was successfully synthesized using the co-precipitation method. The size, shape, surface area, and magnetic properties were characterized by XRD, FE-SEM, EDX, BET, VSM, and UV-Vis-DRS techniques. The synthesized nanoparticles were used as a photocatalyst for the degradation of rose bengal (RB) dye under simulated solar light irradiation. Ag/Bi-Fe_2O_3 showed the better photocatalytic activity of 97.11 % within 135 min when compared to Bi-Fe_2O_3 and Ag-Fe_2O_3. The superior photo-catalytic activity of Ag/Bi-Fe_2O_3 was mainly ascribed to visible light absorption and the suppression of photo-generated electron-hole recombination. Ag/Bi-Fe_2O_3 was found to be a stable photocatalyst during recycling experiments. Besides, the magnetic property of Ag/Bi-Fe_2O_3 makes it an ideal candidate for separation and recovery during recycling. © 2017 Canadian Society for Chemical Engineering

Author keywords

Ag decoration | Bi doping | photocatalysis | solar light | α-Fe_2O_3

Indexed keywords

Engineering controlled terms: Bismuth compounds | Catalyst activity | Dyes | Hematite | Irradiation | Light | Light absorption | Magnetic properties | Photocatalysis | Photocatalysts | Precipitation (chemical) | Recycling | Silver | Synthesis (chemical)

Engineering uncontrolled terms: Bi-doping | Coprecipitation method | Photocatalytic activities | Photogenerated electrons | Recycling experiments | Simulated solar light | Solar light | Visible light absorption

Engineering main heading: Silver compounds

ISSN: 00084034
CODEN: CJCEA
Source Type: Journal
Original language: English
DOI: 10.1002/cjce.23122
Document Type: Article
Publisher: Wiley-Liss Inc.

Document details - Mouth segmentation using coordinate-based method for the improvement of Visual Speech Recognition

Applied Mathematics and Information Sciences

Volume 12, Issue 4, 1 July 2018, Pages 891-897

Mouth segmentation using coordinate-based method for the improvement of Visual Speech Recognition(Article)

Sujatha, P., Radhakrishnan, M.

[a]Department of Computer Science and Engineering, Sudharsan Engineering College, Tamilnadu, India
[b]Department of Civil Engineering, Sethu Institute of Technology, Tamilnadu, India

Abstract

Visual Speech Recognition (VSR) is a process of understanding speech by interpreting visual information of speakers lip movement. Efficient and accurate mouth detection is an essential step in the field of speech recognition using visual-only signals. This research paper proposes a novel approach using Coordinate Based Super-pixel Segmentation algorithm (CBSS) to improve the accuracy of mouth segmentation. The proposed CBSS algorithm is able to robustly segment the mouth region that belongs to a given mouth shape. For the extracted mouth region, Discrete Cosine Transform (DCT) is applied to segregate the crucial features. Then the visual lip features are trained using Support Vector Machine (SVM) to recognize the speech. Experiments are conducted on in-house database with normal hearing persons and hearing impaired persons and also on publically available CUAVE databases. The results from the studies indicate that the proposed CBSS algorithm drastically improves the mouth detection accuracy compared to the existing techniques. This leads to significant improvement in recognition rate for identifying the isolated words. © 2018 NSP.

Author keywords

Discrete cosine transform | Mouth segmentation | Support vector machine | Visual Speech Recognition

ISSN: 19350090
Source Type: Journal
Original language: English
DOI: 10.18576/amis/120424
Document Type: Article
Publisher: Natural Sciences Publishing

Sujatha, P.; Department of Computer Science and Engineering, Sudharsan Engineering College, Tamilnadu, India;

Prominence percentile:

Document details - Facile preparation of diverse copper oxide nanostructures and their characterization

Materials Letters

Volume 222, 1 July 2018, Pages 100-104

Facile preparation of diverse copper oxide nanostructures and their characterization(Article)

Murugesan, N., Remona, A.M., Kumar, S.K., Suresh, S.

[a]Department of Physics, Sethu Institute of Technology, Kariapatti 626 115, Virudhunagar, Tamil Nadu, India
[b]Department of Chemistry, Sri Meenakshi Government Arts College for Women, Madurai, Tamil Nadu 625 002, India
[c]PG & Research Department of Physics, Sri Vidya Mandir Arts and Science College, Katteri 636 902, Uthangarai, Tamil Nadu, India

Abstract

Copper oxide (CuO) nanostructures, such as nanoshuttles, nanodisks and nanoparticles are synthesized by simple hydrothermal and wet chemical methods. The CuO nanostructures are prepared by thermal dehydration of $Cu(OH)_2 \cdot H_2O$ crystal hydrate without any additives. The CuO nanostructures are characterized by energy dispersive X-ray absorption spectroscopy (EDAS), scanning electron microscopy (SEM), Fourier transform infrared (FT-IR) spectroscopy, UV-vis spectroscopy and X-ray diffraction (XRD) techniques. The SEM images show that diameter of CuO nanoshuttles ranges from 300–400 nm and length of ~1 μm. The platelet-like porous CuO nanoparticles have thickness of 0.2–0.4 μm and width of 0.5–1.5 μm. The CuO nanodisks have diameter of 500–700 nm and thickness of 60–120 nm. The EDAS analysis confirms purity of CuO samples. The FTIR spectra of CuO nanostructures exhibit that the vibration peaks correspond to stretching vibrations of Cu–O bond.

Author keywords

CuO nanostructures | Facile preparation | Morphological analysis | Optical properties

Indexed keywords

Engineering controlled terms: Fourier transform infrared spectroscopy | Nanoparticles | Optical properties | Scanning electron microscopy | Spectrum analysis | Stretching | Synthesis (chemical) | Ultraviolet visible spectroscopy | X ray absorption spectroscopy | X ray diffraction

Engineering uncontrolled terms: CuO nanostructures | Energy dispersive x-ray | Facile preparation | Fourier transform infra red (FTIR) spectroscopy | Morphological analysis | Oxide nanostructures | Stretching vibrations | UV-vis spectroscopy

Engineering main heading: Copper oxides

Funding details

Funding sponsor	Funding number	Acronym
Science and Engineering Research Board See opportunities by SERB	ECR/2016/002017	SERB

Funding text #1

The authors (N. Murugesan and S. Karthick Kumar) acknowledge the Science and Engineering Research Board (SERB), Government of India, New Delhi, India for financial support under Early Career Research Award scheme (File Number: ECR/2016/002017).

Document details - Effect of neodymium ion on the structural, electrical and magnetic properties of nanocrystalline nickel ferrites

Ceramics International

Volume 44, Issue 10, July 2018, Pages 11562-11569

Effect of neodymium ion on the structural, electrical and magnetic properties of nanocrystalline nickel ferrites(Article)

Lenin, N., Sakthipandi, K., Kanna, R.R., Rajesh, J.

[a]Department of Physics, Sethu Institute of Technology, Kariapatti, Tamil Nadu 626115, India
[b]Chemistry Research Centre, Mohamed Sathak Engineering College, Kilakarai, Tamilnadu 623806, India

Abstract

$NiNd_xFe_{2-x}O_4$ nanoferrites with different compositions of x = 0.01, 0.03, 0.05, 0.07 and 0.09 were prepared using the sonochemical method. The structural, optical and morphological properties of the prepared nanoferrites were characterized by X-ray diffraction, ultra violet-diffuse reflectance spectroscopy, scanning electron microscopy and X-ray fluorescence techniques. The X-ray diffraction analysis of the prepared nanoferrites confirmed the presence of a cubic spinel structure. The average crystallite sizes of the prepared nanoferrites were 52, 49, 46, 44 and 40 nm for x = 0.01, 0.03, 0.05, 0.07 and 0.09, respectively. The particle size of the prepared $NiNd_xFe_{2-x}O_4$ nanoferrites was in the range 60–40 nm. The dielectric parameters ranged from 2.9 GHz to 5.6 GHz. Decrease in the dielectric constant was observed with an increase in Nd^{3+} ions in the prepared $NiNd_xFe_{2-x}O_4$ nanoferrites. However, a reverse trend was observed in the dielectric loss. An impedance analysis of the prepared nanoferrites was carried out to explore the pseudo-capacitance behavior. The saturation magnetization and remnant magnetization values of the prepared nanoferrites decreased with an increase in the concentration of Nd^{3+} ions in $NiNd_xFe_{2-x}O_4$ nanoferrites.

Author keywords

Dielectric constant | Impedance | Magnetic properties | Nanoferrites | Optical properties

Indexed keywords

Engineering controlled terms: Dielectric losses | Electric impedance | Ions | Iron compounds | Magnetic properties | Nanocrystals | Nickel | Nickel compounds | Optical properties | Particle size | Permittivity | Saturation magnetization | Scanning electron microscopy | Sonochemistry | X ray diffraction analysis

Engineering uncontrolled terms: Cubic spinel structure | Diffuse reflectance spectroscopy | Electrical and magnetic property | Morphological properties | Nano-crystalline nickel | Nano-ferrites | Remnant magnetization | X ray fluorescence techniques

Engineering main heading: Neodymium compounds

Funding details

Funding sponsor	Funding number	Acronym
	P1375255612	
Science and Engineering Research Board See opportunities by SERB		SERB

Document details - Design fabrication and control of a hexapod robot

International Journal of Mechanical and Production Engineering Research and Development

Volume 8, Issue 3, 30 June 2018, Article number IJMPERDJUN201856, Pages 519-524

Design fabrication and control of a hexapod robot(Article)(Open Access)

Kanimozhi, K., Raja Mohamed Rabi, B.

[a]Department of Electrical and Electronics Engineering, Sethu Institute of Technology, Pulloor, Tamil Nadu, India
[b]Department of Mechanical Engineering, Sethu Institute of Technology, Pulloor, Tamil Nadu, India

Abstract

The technological advancements at the global level have put in a large demand for robots in various industrial applications. The aim of the proposed work is to build a six-legged walking robot that is capable of performing basic mobility tasks, such as walking forward and backward and perform rescue operation in mines. The flow of work is comprises of CAD software, Solid works design of robot, fabrication and control. Later velocity of hexapod is tested and the model with one degree of freedom is validated. The complex motion done by hexapod is enhanced by adding sensing components. This modification would enable it to be implemented in the defense applications, automobile industries and machine tooling. Beyond this type of application, hexapod walking is used in a wide variety of tasks such as forests harvesting, in aid to humans in the transport of cargo, as service robots and entertainment. © TJPRC Pvt. Ltd.

Author keywords

CAD software & industrial applications | Degree of freedom | Hexapod robot

ISSN: 22496890
Source Type: Journal
Original language: English

DOI: 10.24247/ijmperdjun201856
Document Type: Article
Publisher: Transstellar Journal Publications and Research Consultancy Private Limited (TJPRC)

Document details - EMG activated robotic arm for amputees

Proceedings of the 2nd International Conference on Inventive Systems and Control, ICISC 2018

27 June 2018, Pages 456-461

2nd International Conference on Inventive Systems and Control, ICISC 2018; JCT College of Engineering and TechnologyCoimbatore; India; 19 January 2018 through 20 January 2018; Category numberCFP18J06-ART; Code 137536

EMG activated robotic arm for amputees(Conference Paper)

Tamilselvi, R., Merline, A., Parisa Beham, M., Vijay Anand, R., Shre Karthik, M., Uthayakumar, R.H.

Department of ECE, Sethu Institute of Technology, Tamilnadu, India

Abstract

Amputation is the removal of limb by trauma, medical illness, or surgery. A transplant or prosthesis is the only option for recovering the loss. This issue can be solved by, measuring muscle activation via electric potential, referred to as electromyography (EMG), has traditionally been used for medical research and diagnosis of neuromuscular disorders. Our focus is on reproducing moving operations using non-invasive electromyogram signals. In this article the authors present a novel approach for developing a robotic arm for amputees based on raw EMG signal acquired from amputees. The main objective is to develop a Prosthesis that functions using the EMG signals generated in the own body of Amputees. The development of prosthetic arm includes Arduino microcontroller for two motions such as upper and down movement. Also the paper is extended in a microprocessor platform involving my-RIO microprocessor of national instruments for accurate EMG signal acquisition and robotic arm movements. © 2018 IEEE.

Author keywords

Amputee | EMG signals | Prosthesis | Robotic arm

Indexed keywords

Engineering controlled terms: Artificial limbs | Electric potential | Prosthetics | Robotic arms | Robotics | Signal processing

Engineering uncontrolled terms: Amputee | Electromyogram signals | EMG signal | Medical research | Microprocessor platforms | Muscle activation | National Instruments | Neuromuscular disorders

Engineering main heading: Electromyography

ISBN: 978-153860807-4
Source Type: Conference Proceeding
Original language: English

DOI: 10.1109/ICISC.2018.8399114
Document Type: Conference Paper
Sponsors:
Publisher: Institute of Electrical and Electronics Engineers Inc.

Document details - Structural, electrical and magnetic properties of NiLa_xFe_{2-x}O₄ nanoferrites

Materials Chemistry and Physics

Volume 212, 15 June 2018, Pages 385-393

Structural, electrical and magnetic properties of $NiLa_xFe_{2-x}O_4$ nanoferrites(Article)

Lenin, N., Rajesh Kanna, R., Sakthipandi, K., Senthil Kumar, A.

[a]Department of Physics, Sethu Institute of Technology, Kariapatti, Tamil Nadu 626 115, India
[b]Department of Mechanical Engineering, Sethu Institute of Technology, Kariapatti, Tamil Nadu 626 115, India

Abstract

$NiLa_xFe_{2-x}O_4$ (x = 0.01, 0.03, 0.05, 0.07 and 0.09) nanoferrites were prepared using the sonochemical reaction method. The prepared nanoferrites were investigated using X-ray diffraction (XRD), ultra violet-diffuse reflectance spectroscopy (UV-DRS), Fourier transform infrared spectroscopy, field emission scanning electron microscopy, energy-dispersive X-ray spectroscopy, electrochemical impedance spectroscopy and a vibrating sample magnetometer to explore their structural, optical, dielectric and magnetic properties. The analysis of the XRD pattern of these $NiLa_xFe_{2-x}O_4$ nanoferrites confirmed the formation of a cubic spinel structure. The average crystallite sizes of the nanoparticles were 54, 49, 47, 43 and 40 nm for the composition x = 0.01, 0.03, 0.05, 0.07 and 0.09, respectively. An impedance analysis of the prepared nanoferrites was carried out to explore the dielectric behavior. Characterization studies indicated that the addition of La to $NiFe_{2-x}O_4$ nanoparticles improved the dielectric properties of the prepared nanoferrites. The hysteresis loops promoted the ferro magnetic behavior present in the prepared $NiLa_xFe_{2-x}O_4$ nanoferrites. A decrease in saturation magnetization and an increase in coercivity were observed with an increase in the La content in the prepared nanoferrites.

Author keywords

Dielectric properties | Magnetic properties | Nanoferrites | Optical properties

Indexed keywords

Engineering controlled terms: Dielectric properties | Electrochemical impedance spectroscopy | Energy dispersive spectroscopy | Field emission microscopes | Fourier transform infrared spectroscopy | Lanthanum | Magnetic materials | Magnetic properties | Nanoparticles | Nickel compounds | Optical emission spectroscopy | Optical properties | Saturation magnetization | Scanning electron microscopy | Spectrum analysis | X ray diffraction

Engineering uncontrolled terms: Characterization studies | Dielectric and magnetic properties | Diffuse reflectance spectroscopy | Electrical and magnetic property | Energy dispersive X ray spectroscopy | Field emission scanning electron microscopy | Nano-ferrites | Vibrating sample magnetometer

Engineering main heading: Iron compounds

Funding details

Funding sponsor	Funding number	Acronym
Department of Science and Technology, Government of Kerala	SERB/F/4106/2014-15	
Department of Science and Technology		DOST

Document details - Design of optimised logic interface for network-on-chip architectures

Electronics Letters

Volume 54, Issue 12, 14 June 2018, Pages 744-746

Design of optimised logic interface for network-on-chip architectures(Article) (Open Access)

Sakthivel, E., Arunraja, M., Uma, K.D., Shanthi, T., Muthukrishnan, A.

[a]PSR Engineering College, Sivakasi, Sevalpatti, Tamil Nadu, India
[b]Silicon Harvest, Madurai, India
[c]Kings College of Engineering, Thanjavur, Tamil Nadu, India

View additional affiliations

Abstract

Achievement of low power consumption in the field of networkon-chip (NoC) is a prominent research in recent days. Many works have attempted to improve performance in NoC using architectural and algorithmic models. The researches attempted to mitigate certain factors like power consumption, speed, complexity, scalability, and flexibility. Currently, NoC engineers incorporated external or internal sense amplifier (SA) in the architectural model of NoC. In the conventional double-tail SAs (DTSAs), more amount of energy is consumed in the heavy traffic state. Hence, many improved DTSAs like reconfigurable DTSA (R-DTSA), variable energy aware SA link for asynchronous NoC (VELAN) DTSA (V-DTSA) were proposed in the previous works and employed with the transceivers. They were evaluated on TSMC 90 nm technology with the real-time data traffics which are obtained using traffic estimators and traffic generators. An optimised logic interface for transceivers of NoC which is superior to the conventional DTSA, R-DTSA, and V-DTSA is developed. The proposed design is implemented with transceivers and evaluated on TSMC 90 nm technology for comparing the performance with the previous SAs. © 2018 The Institution of Engineering and Technology.

Indexed keywords

Engineering controlled terms: Computer architecture | Computer circuits | Electric power utilization | Low power electronics | Nanotechnology | Network-on-chip | Power management | Transceivers

Engineering uncontrolled terms: Algorithmic model | Architectural modeling | Improve performance | Low-power consumption | Network-on-chip (NoC) | Network-on-chip architectures | Traffic estimators | Traffic generators

Engineering main heading: Integrated circuit design

ISSN: 00135194
CODEN: ELLEA
Source Type: Journal
Original language: English

DOI: 10.1049/el.2018.0302
Document Type: Article
Publisher: Institution of Engineering and Technology

Sakthivel, E.; PSR Engineering College, Sivakasi, Sevalpatti, Tamil Nadu, India;

Document details - Properties of double layer geopolymer concrete paver blocks with polyester fibres

International Journal of Civil Engineering and Technology

Volume 9, Issue 5, May 2018, Pages 229-238

Properties of double layer geopolymer concrete paver blocks with polyester fibres(Article)

Kumutha, R., Aarthy, S., Vijai, K.

Department of Civil Engineering, Sethu Institute of Technology, Tamilnadu, India

Abstract

Portland cement is the most widely used binder material for concrete and also it generates large amount of carbon-di-oxide (CO_2) which is responsible for global warming. The other major engineering problem is disposal of solid waste from coal fired thermal power plants namely fly ash. Geopolymer concrete is prepared without using conventional cement and it can be self-cured. The industrial by products like fly ash and Ground Granulated Blast furnace Slag (GGBS) can be activated using alkaline solutions to get cementitious binder. This paper aims to develop the double layered geopolymer concrete paver blocks by the activation of fly ash and GGBS by adding polyester fibres in the top half thickness of paver blocks. In this experimental investigation properties like density, compressive strength, split tensile strength, flexural strength, water absorption, and abrasion resistance of paver blocks were determined by adding polyester fibres in proportions of 0%, 0.1%, 0.2%, 0.3%, 0.4% and 0.5% by volume of concrete. The paver blocks developed were tested as per IS 15658:2006. Test results indicated that addition of polyester fibres in paver blocks has significant advantages with respect to flexural strength and abrasion resistance. © IAEME Publication.

Author keywords

Flexural strength | Fly ash | Geopolymer | GGBS | Paver block | Polyester fibre | Split tensile strength

Funding details

Funding sponsor	Funding number	Acronym
University Grants Commission		UGC

Funding text

The authors sincerely thank University Grants Commission (UGC), New Delhi for funding this project to Dr.R.Kumutha as the Principal Investigator under Minor Research projects scheme.

ISSN: 09766308
Source Type: Journal
Original language: English
Document Type: Article
Publisher: IAEME Publication

Document details - Structural, optical, dielectric and magnetic studies of gadolinium-added Mn-Cu nanoferrites

Journal of Magnetism and Magnetic Materials

Volume 453, 1 May 2018, Pages 78-90

Structural, optical, dielectric and magnetic studies of gadolinium-added Mn-Cu nanoferrites(Article)

Kanna, R.R., Lenin, N., Sakthipandi, K., Kumar, A.S.

[a]Department of Physics, Sethu Institute of Technology, Kariapatti, Tamil Nadu 626 115, India
[b]Department of Mechanical Engineering, Sethu Institute of Technology, Kariapatti, Tamil Nadu 626 115, India

Abstract

Spinel ferrite with the general formula $Mn_{1-x}Cu_xFe_{1.85}Gd_{0.15}O_4$ (x = 0.2, 0.4, 0.6 and 0.8) was synthesized using the standard sonochemical method. The structure, optical, morphology, dielectric and magnetic properties of the prepared $Mn_{1-x}Cu_xFe_{1.85}Gd_{0.15}O_4$ nanoferrites were exhaustively investigated using various characterization techniques. The phase purity, secondary phase and crystallite parameters were studied from X-ray diffraction patterns. Fourier transform infrared spectra showed two absorption bands of transition metal oxides in the frequency range from 400 to 650 cm^{-1}, which are related to asymmetric stretching modes of the spinel ferrites (AB_2O_4). Raman spectra have five active modes illustrating the vibration of O^{2-} ions at both tetrahedral (A) site and octahedral (B) site ions. The wide and narrow scan spectrum from X-ray photoelectron spectroscopy results confirmed the presence of Mn, Cu, Gd, Fe, C and O elements in the composition. The oxidation state and core level of the photo electron peaks of Mn 2p, Cu 2p, Gd 3d, Fe 2p and O 1s were analyzed. The influence of the Cu^{2+} concentration in $Mn_{1-x}Cu_xFe_{1.85}Gd_{0.15}O_4$ on the morphology, varying from nanorods, nanoflakes to spherical, was explored on the basis of scanning electron microscopy images. Ultraviolet diffuse reflectance spectroscopy studies indicated that the optical bandgap (5.12–5.32 eV) of the nanoferrites showed an insulating behavior. The dielectric constant, loss tangent and complex dielectric constant values decreased with an increase in frequency with the addition of Gd^{3+} content. A vibrating sample magnetometer showed that the prepared nanoferrites had a soft ferromagnetic nature. The magnetic parameter changed markedly with an increase in the Cu content in $Mn_{1-x}Cu_xFe_{1.85}Gd_{0.15}O_4$ nanoferrites. The optical, dielectric and magnetic properties were considerably enhanced with the addition of Gd^{3+} ions in the spinel nanoferrites.

Author keywords

Dielectric response | Magnetic measurements | Nanostructured materials | Optical properties

Indexed keywords

Engineering controlled terms: Binary alloys | Copper alloys | Dielectric materials | Fourier series | Gadolinium | Ions | Magnetic properties | Magnetic variables measurement | Magnetism | Manganese | Manganese alloys | Nanorods | Nanostructured materials | Optical properties | Permittivity | Photoelectron spectroscopy | Scanning electron microscopy | Sonochemistry | Spectroscopy | Transition metal compounds | Transition metals | X ray diffraction

Engineering uncontrolled terms: Characterization techniques | Complex dielectric constant | Dielectric and magnetic properties | Dielectric response | Fourier transform infrared spectra | Scanning electron microscopy image | Ultraviolet diffuse reflectance | Vibrating sample magnetometer

Engineering main heading: X ray photoelectron spectroscopy

Document details - Magnetic iron oxide nanoparticles (MIONs) cross-linked natural polymer-based hybrid gel beads: Controlled nano anti-TB drug delivery application

Journal of Biomedical Materials Research - Part A

Volume 106, Issue 4, April 2018, Pages 1039-1050

Magnetic iron oxide nanoparticles (MIONs) cross-linked natural polymer-based hybrid gel beads: Controlled nano anti-TB drug delivery application(Article)

Kesavan, M.P., Ayyanaar, S., Vijayakumar, V., Dhaveethu Raja, J., Annaraj, J., Sakthipandi, K., Rajesh, J.

[a]Mohamed Sathak Engineering College, Kilakarai, Chemistry Research Centre, Ramanathapuram, Tamilnadu 623 806, India
[b]Centre for Organic and Medicinal Chemistry, VIT University, Vellore, Tamilnadu 632 014, India
[c]Department of Materials Science, School of Chemistry, Madurai Kamaraj University, Madurai, Tamilnadu 625 021, India

View additional affiliations

Abstract

The nanosized rifampicin (RIF) has been prepared to increase the solubility in aqueous solution, which leads to remarkable enhancement of its bioavailability and their convenient delivery system studied by newly produced nontoxic, biodegradable magnetic iron oxide nanoparticles (MIONs) cross-linked polyethylene glycol hybrid chitosan (mCS-PEG) gel beads. The functionalization of both nano RIF and mCS-PEG gel beads were studied using various spectroscopic and microscopic techniques. The size of prepared nano RIF was found to be 70.20 ± 3.50 nm. The mechanical stability and swelling ratio of the magnetic gel beads increased by the addition of PEG with a maximum swelling ratio of 38.67 ± 0.29 g/g. Interestingly, this magnetic gel bead has dual responsive assets in the nano drug delivery application (pH and the magnetic field). As we expected, magnetic gel beads show higher nano drug releasing efficacy at acidic medium (pH = 5.0) with maximum efficiency of 71.00 ± 0.87%. This efficacy may also be tuned by altering the external magnetic field and the weight percentage (wt%) of PEG. These results suggest that such a dual responsive magnetic gel beads can be used as a potential system in the nano drug delivery applications. © 2017 Wiley Periodicals, Inc. J Biomed Mater Res Part A: 106A: 1039–1050, 2018. © 2017 Wiley Periodicals, Inc.

Author keywords

dual responsive nano drug delivery | mCS-PEG gel beads | nano RIF | swelling studies

Indexed keywords

Engineering controlled terms: Biochemistry | Crosslinking | Iron oxides | Magnetic fields | Mechanical stability | Metal nanoparticles | Nanomagnetics | Polyethylenes | Solutions | Targeted drug delivery

Engineering uncontrolled terms: Crosslinked polyethylene | Drug delivery applications | External magnetic field | Gel beads | Magnetic iron oxide nanoparticles | nano RIF | Spectroscopic and microscopic techniques | Swelling studies

Engineering main heading: Controlled drug delivery

EMTREE drug terms: chitosan | macrogol | nanobead | rifampicin | ultrasmall superparamagnetic iron oxide | chitosan | cross linking reagent | ferric ion | ferric oxide | macrogol | magnetite nanoparticle | microsphere | polymer | rifampicin | tuberculostatic agent | water

Document details - Cashews whole and splits classification using a novel machine vision approach

Postharvest Biology and Technology

Volume 138, April 2018, Pages 19-30

Cashews whole and splits classification using a novel machine vision approach(Article)

Sunoj, S., Igathinathane, C., Jenicka, S.

[a]Department of Agricultural and Biosystems Engineering, North Dakota State University, 1221 Albrecht Boulevard, Fargo, ND 58102, United States

[b]Sethu Institute of Technology, Pulloor, Kariapatti, Virudhunagar, Tamil Nadu 626115, India

Abstract

Cashew is a high-value and the third largest edible tree nut that is universally consumed as a snack or included in food preparations. Classification of whole and split cashews in industries is carried out manually by visual inspection and hand-picking, which is time-consuming, tedious, challenging, and laborious. A machine vision methodology of capturing cashew shadows and associated image processing ImageJ plugin to classify cashews into whole and splits were developed and tested. The developed classification algorithm was based on a novel idea of using surface grayscale-intensity-profile for split-up cashews and object shadows for split-down and whole cashews. Out of several features derived from grayscale-intensity-profile values, the "length of curve" best classified the split-up cashews from others. The challenge of classifying the whole and split-down cashews was addressed by a new "shadow to total-area ratio." An accuracy of 100 % was achieved by the algorithm. A process scale-up by increasing the height and power of light source was also proposed. The promising results suggest that the developed algorithm can be coupled with a suitable hardware system to perform accurate classification of the whole and split cashews. © 2017

Author keywords

Cashew | Grading | Image processing | ImageJ | Machine vision | Process system

Funding details

Funding sponsor	Funding number	Acronym
National Institute of Food and Agriculture See opportunities by NIFA	ND01472	NIFA

Funding text

This work was supported in part by the USDA National Institute of Food and Agriculture , Hatch Project: ND01472, Accession number: 229896. Research facilities provided by the Northern Great Plains Research Laboratory, USDA-ARS, Mandan, ND is greatly appreciated.

ISSN: 09255214
CODEN: PBTEE
Source Type: Journal
Original language: English

DOI: 10.1016/j.postharvbio.2017.12.006
Document Type: Article
Publisher: Elsevier B.V.

Igathinathane, C.; Department of Agricultural and Biosystems Engineering, North Dakota State University, 1221 Albrecht Boulevard, Fargo, ND, United States;

Document details - Studies on the Parametric Effects of Plasma Arc Welding of 2205 Duplex Stainless Steel

High Temperature Materials and Processes

Volume 37, Issue 3, 26 March 2018, Pages 219-232

Studies on the Parametric Effects of Plasma Arc Welding of 2205 Duplex Stainless Steel(Article)

Bharathi, R.S., Shanmugam, N.S., Kannan, R.M., Vendan, S.A.

[a]Department of Mechanical Engineering, Sethu Institute of Technology, Kariapatti, Tamil Nadu, 626 115, India
[b]Department of Mechanical Engineering, National Institute of Technology, Tiruchirappalli, Tamil Nadu, 620015, India
[c]SELECT, VIT University, Vellore, Tamil Nadu, 632 014, India

Abstract

This research study attempts to create an optimized parametric window by employing Taguchi algorithm for Plasma Arc Welding (PAW) of 2 mm thick 2205 duplex stainless steel. The parameters considered for experimentation and optimization are the welding current, welding speed and pilot arc length respectively. The experimentation involves the parameters variation and subsequently recording the depth of penetration and bead width. Welding current of 60-70 A, welding speed of 250-300 mm/min and pilot arc length of 1-2 mm are the range between which the parameters are varied. Design of experiments is used for the experimental trials. Back propagation neural network, Genetic algorithm and Taguchi techniques are used for predicting the bead width, depth of penetration and validated with experimentally achieved results which were in good agreement. Additionally, micro-structural characterizations are carried out to examine the weld quality. The extrapolation of these optimized parametric values yield enhanced weld strength with cost and time reduction. © 2018 Walter de Gruyter GmbH, Berlin/Boston.

Author keywords

ANOVA | BPNN-GA | duplex stainless steel | plasma arc welding | Taguchi

Indexed keywords

Engineering controlled terms: Analysis of variance (ANOVA) | Backpropagation | Backpropagation algorithms | Carbon dioxide arc welding | Design of experiments | Electric arc welding | Electric welding | Genetic algorithms | Neural networks | Optimization | Plasma welding | Taguchi methods | Welding | Welds

Engineering uncontrolled terms: 2205 duplex stainless steel | Back propagation neural networks | Duplex stainless steel | Experimental trials | Micro-structural characterization | Parameters variations | Parametric effects | Plasma arc welding (PAW)

Engineering main heading: Stainless steel

ISSN: 03346455
CODEN: HTMPE
Source Type: Journal
Original language: English
DOI: 10.1515/htmp-2016-0087
Document Type: Article
Publisher: Walter de Gruyter GmbH and Co. KG

Document details - Lymphoscintigraphic evaluation of lymphatic function in both men and women for early diagnosis and management of filariasis and congenital lymphatic edema

Journal International Medical Sciences Academy

Volume 31, Issue 1, March 2018, Pages 53-57

Lymphoscintigraphic evaluation of lymphatic function in both men and women for early diagnosis and management of filariasis and congenital lymphatic edema(Article)

Jagadesan, K., Tamilselvi, R., Panicker, T.M.R.

[a]K. J. Research Foundation, India
[b]Electronics and Communication Engineering Sethu Institute of Technology, India

Abstract

Lymphedema is caused by an abnormality of the lymphatic system leading to excessive build up of tissue fluid that forms lymph, known as interstitial fluid. Stagnant lymph fluid contains protein and cell debris that causes swelling of affected tissues. Lymph is responsible for transporting essential immune chemicals and cells. Left untreated, lymphedema leads to chronic inflammation, infection and hardening of the skin that, in turn, results in further lymph vessel damage and distortion of the shape of affected body parts. Evaluation of lymphatic flow using radio nuclide tracer by scintigraphy is a standard procedure for obtaining information about the morphology and physiology of lymphatics and their abnormalities like obstruction, dilation and other flow disorder characteristics. One of the main medical applications of this instrument would be in the early diagnosis and management of prevalent diseases such as filariasis and congenital lymphatic edema. The system developed facilitates simultaneous lymphatic flow measurement at different locations in the limb after the injection of radioactive tracer (Tc99m, 140 KeV). Typically, seven miniature scintillation detectors are placed at specified locations on the limbs, which detect the activity at various locations on the body; the health of the lymphatic flow is inferred. This paper highlights the design features of the system and the associated software for medical application.

Author keywords

Counts | Flow Assessment | Flow Velocity | Histogram Analysis | Scatter plot

Funding details

Funding sponsor	Funding number	Acronym
Board of Research in Nuclear Sciences		BRNS

Funding text

This project is funded by the Board of Research in Nuclear Science (BRNS) Dr.K.Jagadeesan will act as guarantor of this article on behalf of all co-authors.

ISSN: 0971071X
CODEN: JMSAE
Source Type: Journal
Original language: English

Document Type: Article
Publisher: International Medical Sciences Academy

Document details - Jet Nebuliser technique to prepare nickel oxide thin films and its characterisations

Journal of Advanced Microscopy Research

Volume 13, Issue 1, March 2018, Pages 33-38

Jet Nebuliser technique to prepare nickel oxide thin films and its characterisations(Conference Paper)

Thirumamagal, R., Ayeshamariam, A., Gnanasaravanan, S., Balasubramaniyan, G., Nivetha, S., Abinaya, S., Jayachandran, M.

[a]Research and Development Centre, Bharathiyar University, Coimbatore, 641046, India
[b]Department of Physics, Ananda College, Devakottai, 630303, India
[c]Department of Physics, Khadir Mohideen College, Adirampattinam, 614701, India

View additional affiliations

Abstract

Nickel oxide thin films were prepared by Jet nebuliser Technique, the structural, morphological, and optical properties of the NiO thin films were characterized and the results are presented. The thin films were characterized by using XRD, XPS, UV-Vis, PL, SEM, TEM to study the structural, elemental analysis, bandgap, emission wavelengths and morphological studies of it. We discussed detailed about these characterization here. Copyright © 2018 American Scientific Publishers All rights reserved.

Author keywords

Annealed Samples NiO Photoluminescence Spectrometer TEM

ISSN: 21567573
Source Type: Journal
Original language: English
DOI: 10.1166/jamr.2018.1354
Document Type: Conference Paper
Publisher: American Scientific Publishers

Ayeshamariam, A.; Research and Development Centre, Bharathiyar University, Coimbatore, India

Document details - ZnO/TiO₂ nanocomposites semiconductor for bacterial applications and dye-sensitized solar cell applications

Journal of Advanced Microscopy Research

Volume 13, Issue 1, March 2018, Pages 3-11

ZnO/TiO_2 nanocomposites semiconductor for bacterial applications and dye-sensitized solar cell applications(Conference Paper)

Geetha, N., Sivaranjani, S., Ayeshamariam, A., Kavin Micheal, M., Saravankkumar, D., Fowziya, S.A., Uduman Mohideen, A.M., Jayachandran, M.

[a]Research and Development Center, Bharathiyar University, Coimbatore, 641046, India
[b]Research and Development Center, Bharathidasan University, Tiruchirappalli, 620024, India
[c]Department of Physics, SBM College of Engineering Technology, Dindigul, 624005, India

View additional affiliations

Abstract

The synthesis of high quality ZnO doped Tio_2 nanoplatelets were synthesized by hydrothermal method at room temperature (RT).Composition, structure and micro morphology of the nanoplatelets were analyzed and determined by X-ray diffraction (XRD) which confirms that crystal structure of doped (Zn-Ti-O) composition.The peaks of (002), (100) and (101) clearly showed hexagonal wurtzite-type structure of ZnO with same lattice constants of the same; a = b = 3.249 Å and c = 5.219 Å.The XRD results revealed that crystal properties of the doped samples are improved without affecting the parent lattice.The morphological and optical properties of Zn-Ti-O nanosamples were characterized by scanning electron microscopy (SEM).TEM observation shows that the ZnO/TiO_2nanoplatelets synthesized by hydrothermal synthesis are well dispersed and the average crystallite size was found to be 10 nm.Biological applications of bacterial strains were calculated for these samples.The antibacterial activity of $ZnO/TiO_2$and its doping was evaluated on bacteria strains like Escherichia coli, Pseudomonas aeruginosa and Staphylococcus aureus.The results obtained in this study suggested that the ZnO/TiO_2 and its doping have potential for use in the treatment of diseases caused by these test organisms.

Author keywords

Biological strains | Colloidal processing | Nanoplatelets | TiO_2 | ZnO

ISSN: 21567573
Source Type: Journal
Original language: English
DOI: 10.1166/jamr.2018.1351
Document Type: Conference Paper
Publisher: American Scientific Publishers

Ayeshamariam, A.; Research and Development Center, Bharathidasan University, Tiruchirappalli, India

Document details - High performance photo-catalyst based on nanosized zno-tio₂nanoplatelets for removal of rhb under visible light irradiation

Journal of Advanced Microscopy Research

Volume 13, Issue 1, March 2018, Pages 12-19

High performance photo-catalyst based on nanosized zno-tio$_2$nanoplatelets for removal of rhb under visible light irradiation(Conference Paper)

Geetha, N., Sivaranjani, S., Ayeshamariam, A., Siva Bharathy, M., Nivetha, S., Kaviyarasu, K., Jayachandran, M.

[a]Research and Development Center, Bharathiyar University, Coimbatore, 641076, India
[b]Department of Physics, SBM College of Engineering and Technology, Dindigul, 624005, India
[c]Department of Physics, Khadir Mohideen College, Adirampattinam, 614701, India

View additional affiliations

Abstract

Nano-sized Zinc oxide-Titanium dioxide (ZnO-Tio$_2$-nanocomposites containing well dispersed ZnO nanoparticles with an average crystal size of 57 nm has been successfully prepared via a hydrothermal method. FTIR characterization reveals that ZnO-Tio$_2$ underwent oxygenation during the preparation of ZnO nanoparticle.The introduction of ZnO-Tio$_2$ in the ZnO-Tio$_2$ hybrid significantly improved the photocatalytic efficiency of ZnO in the degradation of Rhodamine B under visible light irradiation.The apparent reaction constant of ZnO-Tio$_2$ is more times higher than that of pure ZnO, and the photocatalytic efficiency of ZnO-Tio$_2$ remains high even after consecutive reactions. Results from the X-ray photoelectron spectroscopy, Brunauer-Emmett Teller surface area measurements, and electrochemical impedance spectroscopy analysis suggest that the enhancement in the photocatalytic activity of the ZnO-Tio$_2$ hybrid comes from surface area provided by the nano-sized ZnO particles, significant dye adsorption from Tio$_2$ template, and excellent electron reception and conduction of Tio$_2$. Copyright © 2018 American Scientific Publishers All rights reserved.

Author keywords

Adsorption Hydrothermal Photocatalysis Titanium Dioxide ZnO

ISSN: 21567573
Source Type: Journal
Original language: English
DOI: 10.1166/jamr.2018.1352
Document Type: Conference Paper
Publisher: American Scientific Publishers

Ayeshamariam, A.; Research and Development Center, Bharathiyar University, Coimbatore, India

SciVal Topic Prominence

Topic:

Prominence percentile:

Document details - Study on Anticorrosion Behavior of Poly(N-vinylimidazole-co-methoxyethyl methacrylate) Based Coating in the Aggressive Chloride Ion Environment

Journal of Advanced Microscopy Research

Volume 13, Issue 1, March 2018, Pages 20-32

Study on Anticorrosion Behavior of Poly(N-vinylimidazole-co-methoxyethyl methacrylate) Based Coating in the Aggressive Chloride Ion Environment(Conference Paper)

Thirumoolan, D., Siva, T., Sathiyanarayanan, S., Anver Basha, K., Kaviyarasu, K., Ayeshamariam, A., Jayachandran, M.

[a]Department of Chemistry, Annai College of Arts and Science, Kovilacheri, Kumbakonam, Tamil Nadu, 612503, India
[b]Council of Scientific and Industrial Research-Central, Electrochemical Research Institute, Alagappapuram, Karaikudi, Tamil Nadu, 630003, India
[c]Polymer and Nanotechnology Division, P.G.and Research Department of Chemistry, C.Abdul Hakeem College, Hakeem Nagar, Melvisharam, Tamil Nadu, 632509, India

View additional affiliations

Abstract

The imidazole supported copolymer coatings on mild steel are well-advised to hinder the attack of corrosive elements against corrosion as indefinitely effective, it is characterized by FTIR, 1H NMR and 13C NMR spectroscopy techniques and also thermogravimetric analysis (TGA) and differential scanning calorimetry (DSC).The molecular weight and polydispersity indices are ascertained by using Gel permeation chromatography (GPC).The resistance of corrosion performance of poly(N-vinylimidazole-co-Methoxyethyl methacrylate) has been acquired by using DC polarization and AC impedance techniques in 3% NaCl solution. This study has been evidently achieved various corrosion protection efficiency with change in composition of the copolymers. As can be the result proves, the copolymer coated mild steel in 3% Na Cl come down the rate of metal attack. The polymer coated substrate has examined via scanning electron microscope (SEM) and atomic force microscope (AFM) which confirms a very thin film onto the metal surface with excellent anticorrosion effects.

Author keywords

Coatings | Electrochemical Techniques | Polymers | Surface Properties

Funding details

Funding sponsor	Funding number	Acronym
Council of Scientific and Industrial Research, India See opportunities by CSIR		CSIR

Funding text

Acknowledgments: The authors wish to express their thanks to The Director, Central Electrochemical Research Institute, Karaikudi for his kind permission to carry out the work. One of the authors Dr. T. Siva thanks to CSIR, New Delhi for CSIR-RA Fellowship. New Delhi for the financial support. The authors thank Dr. S. Muralidharan, Senior Principal Scientist, CSIR-CECRI, Karaikudi, Tamil Nadu, India for his encouragement.

ISSN: 21567573
Source Type: Journal
Original language: English
DOI: 10.1166/jamr.2018.1353
Document Type: Conference Paper
Publisher: American Scientific Publishers

Document details - Synthesis and characterization of ZnO-CuO nanocomposites powder by modified perfume spray pyrolysis method and its antimicrobial investigation

Journal of Semiconductors

Volume 39, Issue 3, March 2018, Article number 033001

Synthesis and characterization of ZnO-CuO nanocomposites powder by modified perfume spray pyrolysis method and its antimicrobial investigation(Article)

Saravanakkumar, D., Sivaranjani, S., Kaviyarasu, K., Ayeshamariam, A., Ravikumar, B., Pandiarajan, S., Veeralakshmi, C., Jayachandran, M., Maaza, M.

[a]Research and Development Center, Bharathiyar University, Coimbatore, 641046, India
[b]Department of Physics, SBM College of Engineering and Technology, Dindigul, 624001, India
[c]UNESCO-UNISA Africa Department in nanoscience'S/nanotechnology Laboratories, College of Graduate Studies, University of South Africa (UNISA), Muckleneuk Ridge, Pretoria, South Africa

View additional affiliations

Abstract

Pure ZnO, ZnO-CuO nanocomposites can be synthesized by using a modified perfume spray pyrolysis method (MSP). The crystallite size of the nanoparticles (NPs) has been observed by X-ray diffraction pattern and is nearly 36 nm. Morphological studies have been analyzed by using Field Emission Scanning Electron Microscopy (FESEM) and its elemental analysis was reported by Elemental X-ray Analysis (EDX); these studies confirmed that ZnO and CuO have hexagonal structure and monoclinic structure respectively. Fourier Transform Infrared (FTIR) spectra revealed that the presence of functional frequencies of ZnO and CuO were observed at 443 and 616 cm^{-1}. The average bandgap value at 3.25 eV using UV-vis spectra for the entitled composite has described a blue shift that has been observed here. The antibacterial study against both gram positive and negative bacteria has been studied by the disc diffusion method. To the best of our knowledge, it is the first report on ZnO-CuO nanocomposite synthesized by a modified perfume spray pyrolysis method. © 2018 Chinese Institute of Electronics.

Author keywords

CuO nanoparticles FESEM FTIR MSP method XRD

ISSN: 16744926
Source Type: Journal
Original language: English
DOI: 10.1088/1674-4926/39/3/033001
Document Type: Article
Publisher: Institute of Physics Publishing

Ayeshamariam, A.; Research and Development Center, Bharathiyar University, Coimbatore, India;

SciVal Topic Prominence

Topic:

Prominence percentile:

Document details - Mechanical properties of fly ash blended ceramic waste based geopolymeric binder

International Journal of Civil Engineering and Technology

Volume 9, Issue 3, March 2018, Pages 566-576

Mechanical properties of fly ash blended ceramic waste based geopolymeric binder(Article)

Rajeswaran, P., Kumutha, R., Vijai, K.

Department of Civil Engineering, Sethu Institute of Technology, Tamilnadu, India

Abstract

In recent times, researchers in the field of materials engineering have devoted special attention in the practices of waste minimization, prevention of pollution and sustainable development. The development of environment-friendly production processes has been a major focus. In spite of the improvements introduced in manufacturing process, the ceramic industry inevitably generates wastes and about 15% - 30% production goes as waste in the ceramic industry. These wastes pose a problem in the society by creating lot of environmental issues and hence require a suitable form of management in order to achieve sustainable development. In this research, efforts have been made to use ceramic waste powder instead of cement along with other industrial waste materials such as Fly ash and Ground Granulated Blast Furnace Slag (GGBS) to prepare geopolymeric binder. The parameter considered in this study is the proportion of binder components (Fly ash, GGBS and Ceramic Powder). The various combinations of Fly ash, GGBS and Ceramic powder considered are 80%, 20%, & 0%; 70%, 20% & 10%; 60%, 20% & 20%; 50%, 20% & 30%; 40%, 20% & 40%; 30%, 20% & 50% respectively. The ratio of binder to sand and Na2SiO3/NaOH is taken as 1:2 and 2.5 respectively. The alkaline liquid to binder ratio considered for the present study is 0.45. The properties of mortar such as Compressive Strength, Density, Water Absorption, Sorptivity, Flexural Strength and Bond Strength were determined as per relevant Indian and ASTM standards. The Compressive strength of mortar cubes was determined at 7 and 28 days. It can be concluded that, as the percentage of the Ceramic waste powder increases, the Compressive strength, Bond strength and Flexural strength of the geopolymeric binder decreases when compared to conventional binder.

Author keywords

Alkaline liquid and strength | Binder | Ceramic powder | Fly ash | Geopolymer mortar | GGBS

ISSN: 09766308
Source Type: Journal
Original language: English
Document Type: Article
Publisher: IAEME Publication

Kumutha, R.; Department of Civil Engineering, Sethu Institute of Technology, Tamilnadu, India;

Document details - A study on impact of rework in a manufacturing system using LEAN techniques

Journal of Computational and Theoretical Nanoscience

Volume 15, Issue 3, March 2018, Pages 886-894

A study on impact of rework in a manufacturing system using LEAN techniques(Article)

Sudarsan, D., Sivakumar, G.D.

[a]Department of Mechanical Engineering, PSNA College of Engineering and Technology, Dindigul, Tamil Nadu, 624622, India
[b]Department of Mechanical Engineering, Sethu Institute of Technology, Kariapatti, Tamil Nadu, 626115, India

Abstract

Globalization played a key role in integrating all the countries and paved the way for industries to reach wide range of customers all over the world. Though the Manufacturers were able to enlarge their market boundary, they started facing stringent competition among the industries in the global level. Providing high quality of products at least price is the only success mantra for each and every organization to sustain in the global market. This mantra is possible by applying Lean concepts. Lean manufacturing techniques eliminate the waste in several ways without compromising the quality of the product. In this paper the impact of rework and scrap is analysed using stochastic process and the optimum Kanban size is identified to reduce the cost of production. A manufacturing system where the machines are arranged in tandem with one inspection unit at the end of the production line is considered for study. The impact of rework is analyzed by comparing the average cost per product produced in different constrained environments. Kanban cards are used to optimize the inventory level.

Author keywords

Kanban Cards | Lean Manufacturing | Rework and Scrap Analysis | Stochastic Process

ISSN: 15461955
Source Type: Journal
Original language: English
DOI: 10.1166/jctn.2018.7171
Document Type: Article
Publisher: American Scientific Publishers

Sudarsan, D.; Department of Mechanical Engineering, PSNA College of Engineering and Technology, Dindigul, Tamil Nadu, India

Document details - Anti-spoofing enabled face recognition based on aggregated local weighted gradient orientation

Signal, Image and Video Processing

Volume 12, Issue 3, 1 March 2018, Pages 531-538

Anti-spoofing enabled face recognition based on aggregated local weighted gradient orientation(Article)

Beham, M.P., Roomi, S.M.M.

[a]ECE Department, Sethu Institute of Technology, Madurai, Tamil Nadu, India
[b]ECE Department, Thiagarajar College of Engineering, Madurai, Tamil Nadu, India

Abstract

Spoofing attack is a catastrophic threat for biometric authentication systems. Inspired by the concept of depth map estimation, a novel anti-spoofing technique based on aggregated local weighted gradient orientation (ALWGO) is proposed. We first estimate the depth of the specimen face image. In the next step, highly discriminant ALWGO features are extracted from the depth map. Finally, a sparse representation classifier is trained to distinguish between the genuine and fake faces. This paper particularly addresses the potential of texture gradient features and their variations, on three types of attacks, viz. printed high-definition photographs, warped photographs and videos displayed on mobile phones. The usage of ALWGO features has been extended for further face recognition. Our proposed approach is robust and nonintrusive as compared to many existing methods. Extensive experimental analysis on publicly available databases clearly demonstrates the superiority of our approach for both face spoofing detection and recognition systems. © 2017, Springer-Verlag London Ltd.

Author keywords

ALWGO feature | Depthmap | Face recognition | Face spoofing

Indexed keywords

Engineering controlled terms: Photography

Engineering uncontrolled terms: ALWGO feature | Biometric authentication system | Depth Map | Experimental analysis | Face spoofing | Face spoofing detections | Gradient orientations | Sparse representation

Engineering main heading: Face recognition

ISSN: 18631703
Source Type: Journal
Original language: English
DOI: 10.1007/s11760-017-1189-1
Document Type: Article
Publisher: Springer London

Beham, M.P.; ECE Department, Sethu Institute of Technology, Madurai, Tamil Nadu, India;

Document details - Performance evaluation of various classification algorithms for the diagnosis of Parkinson's disease

Proceedings of the 2017 IEEE International Conference on Intelligent Techniques in Control, Optimization and Signal Processing, INCOS 2017

Volume 2018-February, 26 February 2018, Pages 1-7

2017 IEEE International Conference on Intelligent Techniques in Control, Optimization and Signal Processing, INCOS 2017; Kalasalingam UniversityKrishnankoil-626 126, SrivilliputturTamil Nadu; India; 23 March 2017 through 25 March 2017; Category numberCFP17G37-ART; Code 135012

Performance evaluation of various classification algorithms for the diagnosis of Parkinson's disease(Conference Paper)

Jebakumari, V.S., Shanthi, D., Sridevi, S., Meha, P.

[a]Dept of Computer Science and Engg, Kamaraj College of Engineering and Technology, Virudhunagar, India
[b]Dept of Computer Science and Engg, PSNA College of Engineering and Technology, Dindigul, India
[c]Dept of Computer Science and Engg, Sethu Institute of Technology, Kariapatti, India

Abstract

The continual increase in Parkinson's Disease (PD) has made the analysis of PD an important issue in the medical field. Studies have been done for PD diagnosis with both Electro Myography (EMG) and Speech Signals. This paper presents various methods of classification for efficient diagnosis of Parkinson's disease using EMG signal. Three different classification methods were applied and a comparative study was carried out. They are Neural Network (NN), Naive Bayes and Logistic Regression respectively. Different evaluation criteria were applied for calculating the performance of these classifiers. It was found that the classification accuracy is the best for Naive Bayes Classifier. © 2017 IEEE.

Author keywords

Electro Myography | Naive Bayes and Logistic Regression | Neural Network | Parkinson's Disease

Indexed keywords

Engineering controlled terms: Biomedical signal processing | Classifiers | Electromyography | Neural networks | Neurodegenerative diseases | Regression analysis

Engineering uncontrolled terms: Classification accuracy | Classification algorithm | Classification methods | Logistic regressions | Naive Bayes classifiers | Neural network (nn) | Parkinson's disease | Performance evaluations

Engineering main heading: Computer aided diagnosis

ISBN: 978-150904777-2
Source Type: Conference Proceeding
Original language: English

DOI: 10.1109/ITCOSP.2017.8303089
Document Type: Conference Paper
Sponsors: IEEE Madras Section
Publisher: Institute of Electrical and Electronics Engineers Inc.

Document details - Impact of post processing parameter on mechanical properties and surface roughness of selective laser sintered sand mold casting part

Indian Journal of Engineering and Materials Sciences

Volume 25, Issue 1, February 2018, Pages 78-84

Impact of post processing parameter on mechanical properties and surface roughness of selective laser sintered sand mold casting part(Article)

Arasu, I.V., Chockalingam, K.

[a]Department of Mechanical Engineering, Sethu Institute of Technology, Pulloor, Kariapatti, 626 115, India
[b]Department of Mechanical Engineering, Thiagarajar College of Engineering, Madurai, 625 015, India

Abstract

Rapid casting (RC) is an advanced manufacturing technology in additive manufacturing (AM) processes to produce casting parts rapidly. Selective laser sintering (SLS), that is used to produce sacrificial sand mould for casting metal parts in the foundry industry, is regarded as the RC. In this paper the impact of post curing time (PCT), post curing temperature (PCTP), coating (COAT) on the SLS sand mould to the assessment of surface roughness and mechanical properties of the final part produced have been examined. The Taguchi's L8 orthogonal array is selected for the experiments and findings are evaluated using analysis of variance (ANOVA). The experimental results show that the parameter PCTP has a significant effect on the mechanical properties and COAT on surface roughness. Surprisingly, the uncoated mould casting parts exhibit good surface finish than coated mould parts, due to the smaller diameter holes caused an uneven coating on the mould. The microstructure and bonding of the sintered moulds are observed by SEM analysis. Findings also suggest that machining will be always required to decrease the surface roughness.

Author keywords

ANOVA | Casting | Coating | Selective laser sintering | Surface roughness

Indexed keywords

Engineering controlled terms: 3D printers | Analysis of variance (ANOVA) | Casting | Coatings | Curing | Foundry sand | Laser heating | Mechanical properties | Molds | Sintering

Engineering uncontrolled terms: Advanced manufacturing technologies | Foundry industries | Laser sintered | Orthogonal array | Post processing | Sand mold casting | Selective laser sintering | Surface finishes

Engineering main heading: Surface roughness

ISSN: 09714588
Source Type: Journal
Original language: English
Document Type: Article
Publisher: National Institute of Science Communication and Information Resources (NISCAIR)

Arasu, I.V.; Department of Mechanical Engineering, Sethu Institute of Technology, Pulloor, Kariapatti, India;

Document details - One pot synthesis of new poly(vinyl alcohol) blended natural polymer based magnetic hydrogel beads: Controlled natural anticancer alkaloid delivery system

Journal of Biomedical Materials Research - Part A

Volume 106, Issue 2, February 2018, Pages 543-551

One pot synthesis of new poly(vinyl alcohol) blended natural polymer based magnetic hydrogel beads: Controlled natural anticancer alkaloid delivery system(Article)

Kesavan, M.P., Ayyanaar, S., Lenin, N., Sankarganesh, M., Dhaveethu Raja, J., Rajesh, J.

[a]Chemistry Research Centre, Mohamed Sathak Engineering College, Kilakarai, Ramanathapuram, Tamilnadu 623 806, India

[b]Department of Physics, Sethu Institute of Technology, Kariapatti, Virudhunagar, Tamilnadu 626 115, India

Abstract

Facile one-pot synthesis has been demonstrated for new biocompatible and dual responsive magnetic iron oxide nanoparticles cross-linked poly(vinyl alcohol) (PVA) blended natural polymer chitosan (CS) based hydrogel beads (mCS-PVA) as a controlled natural anticancer alkaloid Luotonin A (LuA) delivery system. The prepared magnetic hydrogel beads were characterized using powder X-ray diffraction measurement, Fourier transform-infrared spectroscopy, scanning electron microscopy, energy dispersive X-ray spectroscopy, and vibrating sample magnetometer. The magnetic hydrogel beads are exhibited significant water retention and follow the second order kinetic model in swelling study. The swelling ratio of the magnetic gel beads increased by the addition of PVA and showed a maximum swelling ratio of 40.83 ± 1.01 g/g and follows non-Fickian water transport mechanism. Stimuli responsive mCS and mCS-PVA hydrogel beads functionalized with LuA is demonstrated for controlled release at physiological pH and under magnetic field. The magnetic hydrogel beads show highest LuA releasing efficacy at acidic medium (pH = 5.0) with maximum efficiency of 73.33 ± 1.44%. This efficacy may also be tuned by altering the external magnetic field as well as the weight percentage (wt %) of polyethylene glycol. It is clearly that the newly produced magnetic hydrogel beads can be served as an effective intestinal LuA delivery system. © 2017 Wiley Periodicals, Inc. J Biomed Mater Res Part A: 106A: 543–551, 2018. © 2017 Wiley Periodicals, Inc.

Author keywords

drug delivery | dual responsive | Luotonin A | mCS-PVA gel beads | swelling studies

Indexed keywords

Engineering controlled terms: Alkaloids | Biocompatibility | Crosslinking | Drug delivery | Energy dispersive spectroscopy | Fourier transform infrared spectroscopy | Hydrogels | Iron oxides | Magnetic fields | Magnetic nanoparticles | pH | Polyvinyl alcohols | Scanning electron microscopy | Synthesis (chemical) | Targeted drug delivery

Engineering uncontrolled terms: dual responsive | Energy dispersive X ray spectroscopy | Luotonin A | Magnetic iron oxide nanoparticles | Poly (vinyl alcohol) (PVA) | PVA-gel | Swelling studies | Vibrating sample magnetometer

Engineering main heading: Controlled drug delivery

Document details - Structural transition in Gd doped LaCrO₃ isovalent by in-situ ultrasonic measurements

Physica B: Condensed Matter

Volume 530, 1 February 2018, Pages 270-276

Structural transition in Gd doped $LaCrO_3$ isovalent by in-situ ultrasonic measurements(Article)

Thamilmaran, P., Arunachalam, M., Sankarrajan, S., Sakthipandi, K., Sivabharathy, M., Jebaseelan Samuel, E.J.

[a]Department of Physics, Sri SRNM College, Sattur, Tamil Nadu 626 203, India
[b]Department of Physics, Sethu Institute of Technology, Kariapatti, Tamil Nadu 626 115, India
[c]Department of Physics, School of Advanced Sciences, VIT University, Vellore, Tamil Nadu 632 014, India

Abstract

The Gadolinium substituted $LaCrO_3$ isovalent perovskite was investigated in the present study. The samples of $La_{1-x}Gd_xCrO_3$ (x = 0, 0.025, 0.05, 0.10, 0.15 and 0.20) were prepared employing solid state reaction method. The X-Ray Diffraction (XRD) patterns confirmed that the prepared samples have orthorhombic structure with pnma space group at room temperature. The crystalline size of the samples is 98, 89, 76, 72, 60 and 55 nm respectively for the composition x = 0, 0.025, 0.05, 0.10, 0.15 and 0.20 and the same is decreasing with an increase in substitution of Gd in the samples. The scanning electron microscope images of the samples have spherical like morphology with a particle size of 150, 131, 129, 120, 116 and 94 nm for the composition x = 0, 0.025, 0.05, 0.10, 0.15 and 0.20 respectively. In-situ ultrasonic measurements were made over a wide range of temperature from 300 to 700 K to determine structural transition. The measured temperature dependent ultrasonic parameters are used to explore the structural phase transition from orthorhombic to rhombohedral phase in the prepared sample at high temperatures. © 2017 Elsevier B.V.

Author keywords

Attenuation | Lanthanum chromite | Structural transition | Ultrasonic velocity

Indexed keywords

Engineering controlled terms: Chromium compounds | Particle size | Scanning electron microscopy | Solid state reactions | Ultrasonic measurement | Ultrasonic velocity | X ray diffraction

Engineering uncontrolled terms: Attenuation | Lanthanum chromite | Measured temperatures | Orthorhombic structures | Solid state reaction method | Structural phase transition | Structural transitions | Ultrasonic parameters

Engineering main heading: Lanthanum compounds

Funding details

Funding sponsor	Funding number	Acronym
Science and Engineering Research Board See opportunities by SERB	SR/FTP/PS-068/2014	SERB

Funding text

One of the authors (K.S) is thankful to Science and Engineering Research Board (SERB), New Delhi (Sanction no.: SR/FTP/PS-068/2014) for the financial support.

Document details - Unprecedented homotopy perturbation method for solving nonlinear equations in the enzymatic reaction of glucose in a spherical matrix

Bioprocess and Biosystems Engineering

Volume 41, Issue 2, 1 February 2018, Pages 281-294

Unprecedented homotopy perturbation method for solving nonlinear equations in the enzymatic reaction of glucose in a spherical matrix(Article)(Open Access)

Saranya, K., Mohan, V., Kizek, R., Fernandez, C., Rajendran, L.

[a]Department of Mathematics, Thiagarajar College of Engineering Madurai, Madurai, 625 015, India
[b]Central Laboratories, Faculty of Pharmacy, University of Veterinary and Pharmaceutical Sciences Brno, Palackeho 1946/1, Brno, 612 42, Czech Republic
[c]Department of Biomedical and Environmental Analyses, Wroclaw Medical University, Borowska 211, Wroclaw, 50-556, Poland

View additional affiliations

Abstract

The theory of glucose-responsive composite membranes for the planar diffusion and reaction process is extended to a microsphere membrane. The theoretical model of glucose oxidation and hydrogen peroxide production in the chitosan-aliginate microsphere has been discussed in this manuscript for the first time. We have successfully reported an analytical derived methodology utilizing homotopy perturbation to perform the numerical simulation. The influence and sensitive analysis of various parameters on the concentrations of gluconic acid and hydrogen peroxide are also discussed. The theoretical results enable to predict and optimize the performance of enzyme kinetics. © 2017, Springer-Verlag GmbH Germany, part of Springer Nature.

Author keywords

Enzyme reaction mechanism | Enzyme-encapsulated polymer microspheres | Mathematical modeling | New approaches of homotopy perturbation method

Indexed keywords

Engineering controlled terms: Chemical plants | Composite membranes | Enzyme kinetics | Glucose | Hydrogen peroxide | Mathematical models | Microspheres | Nonlinear equations | Oxidation | Peroxides

Engineering uncontrolled terms: Enzymatic reaction | Enzyme reaction | Homotopy Perturbation Method (HPM) | Hydrogen peroxide production | Polymer microspheres | Sensitive analysis | Solving nonlinear equations | Theoretical modeling

Engineering main heading: Perturbation techniques

EMTREE drug terms: gluconic acid | glucose | hydrogen peroxide | oxygen | alginic acid | chitosan | glucose | glucose oxidase | glucuronic acid | hexuronic acid | immobilized enzyme | microsphere

EMTREE medical terms: Article | chemical reaction | homotopy perturbation method | mathematical analysis | pH | priority journal | simulation | theoretical model | artificial membrane | chemical model | chemistry

Document details - Colorimetric and NIR fluorescence receptors for F[–] ion detection in aqueous condition and its Live cell imaging

Sensors and Actuators, B: Chemical

Volume 255, February 2018, Pages 3194-3206

Colorimetric and NIR fluorescence receptors for F^- ion detection in aqueous condition and its Live cell imaging(Article)

Kumar, G.G.V., Kesavan, M.P., Sivaraman, G., Rajesh, J.

[a]Department of Chemistry, Sethu Institute of Technology, Kariapatti, Tamilnadu 626 115, India
[b]Chemistry Research Centre, Mohamed Sathak Engineering College, Kilakarai, Tamil Nadu 623 806, India
[c]Institute for Stem Cell Biology and Regenerative Medicine, Bangalore, Karnataka 560065, India

Abstract

In this paper, a new kind of colorimetric receptors R1 and R2 for fluoride ions have been synthesized and characterized by various spectral techniques. Single crystal X-ray diffraction study confirms, the receptor R2 possesses the orthorhombic centrosymmetric lattice with the donor atoms of ONS. In naked eye, absorption and fluorescence studies were evidently predicting the potential sensing capability of the receptors R1 and R2 that detect fluoride ions by competing with various ions. The detection limit was found to be more or less same as low as 10^{-7} M for R1 and R2 with F^-. We proposed the 1:1 binding formation of R1 and R2 by means of F^- ion was further supported by NMR titration and Job's plot analysis. Besides, the density functional theory (DFT) calculations have been theoretically sustained with the sensing mechanism. Moreover, both the two receptors had the possibility of potentially applied in an analytical application for detecting the trace amounts of fluoride ion in the real water sample analysis was demonstrated. Live cell imaging experiments with the receptors displayed that these receptors extensively applicable to detect fluoride ions in HeLa cells under physiological conditions. Finally, the use of test strips containing R1 and R2 that sense fluoride ions in solution medium and supported on solid medium (silica) was exhibited. © 2017 Elsevier B.V.

Author keywords

Colorimetric sensors | DFT | Fluorescence sensors | Fluoride ion | Live cell imaging | Receptors

Indexed keywords

Engineering controlled terms: Color | Colorimetry | Cytology | Density functional theory | Derivatives | Design for testability | Fluorescence | Fluorine compounds | Single crystals | X ray diffraction

Engineering uncontrolled terms: Colorimetric sensors | Fluorescence sensors | Fluoride ion | Live-cell imaging | Receptors

Engineering main heading: Ions

Funding details

Funding sponsor	Funding number	Acronym
	SB/FT/CS-130/2012	

Funding text

Document details - Reversible NIR fluorescent probes for Cu²⁺ ions detection and its living cell imaging

Sensors and Actuators, B: Chemical

Volume 255, February 2018, Pages 3235-3247

Reversible NIR fluorescent probes for Cu^{2+} ions detection and its living cell imaging(Article)

Gujuluva Gangatharan, V.K., Mookkandi Palsamy, K., Gandhi, S., Jamespandi, A., Kandasamy, A., Arunachalam, T., Shenmuganarayanan, A., Balasubramaniyam, S., Jegathalaprathaban, R.

[a]Department of Chemistry, Sethu Institute of Technology, Kariapatti, Tamilnadu 626 115, India
[b]Chemistry Research Centre, Mohamed Sathak Engineering College, Kilakarai, Tamil Nadu 623 806, India
[c]Institute for Stem Cell Biology and Regenerative Medicine, Bangalore, Karnataka 560065, India

View additional affiliations

Abstract

A new, easily accessible "off-on-off" colorimetric and fluorescent probes are designed and synthesized. It displayed highly selective and sensitive detection towards Cu^{2+} ion without having any interference from other competitive metal ions. The examined UV–vis and fluorescence spectral changes are caused by the operation if the ligand to metal charge transfer (LMCT) and chelation enhanced fluorescence effect (CHEF) in the presence of Cu^{2+} to the present probes. Besides, the density functional theory (DFT) calculations have been theoretically supported the photophysical changes. These probes are potentially applied in an analytical application for detecting the trace amount of Cu^{2+} ions in real water samples. Furthermore, these probes are successfully applied for fluorescence imaging of Cu^{2+} in HeLa cells. Finally, the use of test strips based on these probes is fabricated, which could act as a convenient and efficient Cu^{2+} test kit in solution medium and supported on solid medium (silica). © 2017 Elsevier B.V.

Author keywords

Copper ion sensors | DFT calculations | Live cell imaging | Logic gates | Turn-on fluorescence

Indexed keywords

Engineering controlled terms: Charge transfer | Density functional theory | Design for testability | Fluorescence | Logic gates | Metal ions | Metals | Probes

Engineering uncontrolled terms: Analytical applications | Copper ions | DFT calculation | Enhanced fluorescence | Fluorescence imaging | Ligand-to-metal charge transfers | Live-cell imaging | Sensitive detection

Engineering main heading: Copper

Funding details

Funding text

We gratefully acknowledge the DST-SERB (Ref. No: SB/FT/CS-130/2012) for financial support. The authors are honestly expressed their heartfelt thanks to Sethu Institute of Technology, Kariapatti for their lab facilities and moreover thank to Madurai Kamaraj University and Mohamed Sathak Engineering College, Kilakarai for their instrumentation facilities. GS thanks Instem and DST-SERB for National post-doctoral fellowship (PDF/2016/000742).

ISSN: 09254005
CODEN: SABCE
Source Type: Journal
DOI: 10.1016/j.snb.2017.09.150
Document Type: Article
Publisher: Elsevier B.V.

Document details - Influence of shot peening and plasma ion nitriding on tensile strength of 2205 duplex stainless steel using A-PAW

Materials Science and Engineering A

Volume 709, 2 January 2018, Pages 232-240

Influence of shot peening and plasma ion nitriding on tensile strength of 2205 duplex stainless steel using A-PAW(Article)

Selvabharathi, R., Muralikannan, R.

Department of Mechanical Engineering, Sethu Institute of Technology, Pulloor, Kariapatti, Tamil Nadu 626115, India

Abstract

The present study shows the effect of plasma ion nitriding and shot peening process on the microstructure, tensile, bending strength and hardness of 2205 duplex stainless steel joint materials by employing plasma arc welding (A-PAW). Double shot air blast shock peening DABSP was achieved on the 2205 duplex stainless steel to analyze the strength in the pre-peening and peening weld treatment. After welding process, tensile failure occurred in the fusion zone of the material joint for both pre peening and peening process. It was confirmed that the yield and tensile strength of the welded joints improved significantly after DABSP in the weld and heat affected regions of the weldments. To improve the hardness of 2205 duplex stainless steel, plasma ion nitriding process was conducted at 480 °C for 9 h in peened condition. The investigation of samples prepared by pre-peening, peening and plasma ion nitriding were conducted at the fusion zone by employing scanning electron microscopy, X-ray diffractometry and transmission electron microscopy techniques. Residual stress analysis was carried out on the materials coupons using X-ray Diffraction analysis. The present study expressed that the CrN is not formed after performing plasma ion nitriding and shot peening which resulted in better tensile and bending strength. © 2017 Elsevier B.V.

Author keywords

Air blast shock peening | Micro structure | Plasma ion nitriding | Tensile strength

Indexed keywords

Engineering controlled terms: Bending strength | Chromium compounds | Electric welding | Electron microscopy | Hardness | High resolution transmission electron microscopy | Ions | Microstructure | Nitriding | Plasma applications | Plasma welding | Scanning electron microscopy | Shot peening | Stress analysis | Tensile strength | Transmission electron microscopy | Welding | Welds | X ray diffraction analysis

Engineering uncontrolled terms: 2205 duplex stainless steel | Fusion zones | Plasma ion nitriding | Shock peening | Tensile failures | Weld treatment | Welding process | Yield and tensile strength

Engineering main heading: Stainless steel

ISSN: 09215093
Source Type: Journal
Original language: English

DOI: 10.1016/j.msea.2017.10.068
Document Type: Article
Publisher: Elsevier Ltd

Document details - Comparative study of ZnO, TiO₂, ZnO-doped TiO₂ and TiO₂-doped ZnO nanocomposites and their biological applications

Journal of Bionanoscience

Volume 12, Issue 6, 2018, Pages 748-753

Comparative study of ZnO, TiO_2, ZnO-doped TiO_2 and TiO_2-doped ZnO nanocomposites and their biological applications(Article)

Geetha, N., Ayeshamariam, A., Sivaranjani, S., Nagarani, N., Prabhavathi, G., Srinivasan, M.P., Punithavelan, N., Pérez-Sánchez, H., Jayachandran, M.

[a]Research and Development Center, Bharathiyar University, Coimbatore, 641046, India
[b]Department of Physics, Kunthavai Nacchiyar Government Arts College for Women (Auto), Tamil Nadu, Thanjavur, 613007, India
[c]Department of Physics, Khadir Mohideen College, Tamil Nadu, Adirampattinam, 614701, India

View additional affiliations

Abstract

The ZnO, TiO2, and ZnO-10 wt% of TiO2 and TiO2-10 wt% ZnO nanoparticles are synthesized by solution combustion synthesis at 200 C. The crystal structure of the four samples are analyzed by X-ray diffractometer (XRD). XRD results suggest that the crystal properties of the doped samples improved without any effect on the parent lattice. The morphological and optical properties of the TiO2-doped ZnO sample are characterized by scanning electron microscopy and UV-Vis spectroscopy. The IR and Raman laser observations indicate that the compounds consist of Ti-O and Zn-O bonds, suggesting that the prepared compounds are indeed pure. An upward shift, which is most likely due to the doping material, is observed in the absorption studies. This article discusses the structural, optical, and morphological properties that are changed with the doping concentrations.

Author keywords

Combustion | FTIR | Titanium Oxide | Zinc Oxide

Indexed keywords

Engineering controlled terms: Combustion | Combustion synthesis | Crystal structure | Fourier transform infrared spectroscopy | II-VI semiconductors | Optical properties | Scanning electron microscopy | Synthesis (chemical) | Titanium dioxide | Titanium oxides | Ultraviolet visible spectroscopy | X ray diffraction | Zinc oxide | ZnO nanoparticles

Engineering uncontrolled terms: Biological applications | Comparative studies | Doping concentration | FTIR | Morphological properties | Solution combustion synthesis | UV-vis spectroscopy | X ray diffractometers

Engineering main heading: TiO2 nanoparticles

ISSN: 15577910
Source Type: Journal
Original language: English

DOI: 10.1166/jbns.2018.1606
Document Type: Article
Publisher: American Scientific Publishers

Document details - Evaluation of the cytotoxicity effect on HAp doped with Ce ₂ O ₃ and its assessment with breast cancer cell line of MCF-7

Journal of Bionanoscience

Volume 12, Issue 3, 2018, Pages 350-356

Evaluation of the cytotoxicity effect on HAp doped with Ce_2O_3 and its assessment with breast cancer cell line of MCF-7(Article)

Thirumamagal, R., Fowziya, S.A., Uduman Mohideen, A.M., Hameedha Beevi, A., Ayeshamariam, A., Mohamed Saleem, A., Jayachandran, M.

[a]Research and Development Center, Bharathiyar University, Coimbatore, 641076, India
[b]Department of Physics, Ananda College, Devakottai, 630303, India
[c]Departmnet of Chemistry, Khadir Mohideen College, Adirampattinam, 614701, India

View additional affiliations

Abstract

Cerium oxide has been widely investigated because of its multiple applications, such as a catalyst, an electrolyte material of solid oxide fuel cells and a material of high refractive index. Promising results have been obtained using cerium (Ce_2O_3) oxide nanoparticles (CNPs) as antioxidants in biological systems. For pure Ce_2O_3, the crystallite size was 33 nm and the composites of Ce_2O_3/HAp is having fluorite structure of lattice constant 5.313 Å and its size is equal to 24 nm. The pure Ce_2O_3/HAp nanocomposite had a large weight loss due to its fast drug release. The Ce_2O_3/HAp nanocomposite had higher water absorption than the pure Ce_2O_3, and increasing the concentration of the Hap will increase the water absorption too. The in vitro cell-line study showed a good biocompatibility and bioactivity of the developed Ce_2O_3/HAp nanocomposite. Water soluble MTT assay is metabolized by the metabolically active cells and the resultant product can be quantified by spectrophotometry using a plate reader at 570 nm.

Author keywords

HAp | MCF-7 cell line | MTT assay | SAED

Indexed keywords

Engineering controlled terms: Biocompatibility | Cell culture | Cerium oxide | Crystallite size | Drug delivery | Electrolytes | Fluorspar | Fuel cells | Nanocomposites | Refractive index | Solid oxide fuel cells (SOFC)

Engineering uncontrolled terms: Breast cancer cells | Cytotoxicity effects | Electrolyte material | High refractive index | MCF-7 cells | MTT assays | Multiple applications | SAED

Engineering main heading: Water absorption

ISSN: 15577910
Source Type: Journal
Original language: English

DOI: 10.1166/jbns.2018.1530
Document Type: Article
Publisher: American Scientific Publishers

Ayeshamariam, A.; Research and Development Center, Bharathiyar University, Coimbatore, India

Document details - Green synthesis of nanoparticle by plant extracts - A new aproach in nanoscience

Journal of Bionanoscience

Volume 12, Issue 3, 2018, Pages 401-407

Green synthesis of nanoparticle by plant extracts - A new aproach in nanoscience(Article)

Mohamed Saleem, A., Prabhavathi, G., Karunanithy, M., Ayeshamariam, A., Jayachandran, M.

[a]Research and Development Center, Bharathidasan University, Thiruchirappalli, 620024, India
[b]Department of Physics, Jamal Mohamed College (Auto), Thiruchirappalli, 620024, India
[c]Department of Physics, SKPD Boys Higher Secondary School, Chennai, 600001, India

View additional affiliations

Abstract

Green synthesis of Nanoparticles (NPs) by plant extracts is an alternative feasible synthesis technique which has gained much attention and application in recent times. Various metabolites existing such as alkaloids, saponins, tannins, terpenoids, glycoslides, phenolic and proteins play an important role in bioreduction of metal ions to nanoparticles. The ability of plant extracts to reduce metal ions had been known since the early 1900s, although the nature of the reducing agents involved was not well understood. In view of its simplicity the use of live plants either whole plant extracts or plane tissue for reducing metal salts to NPs has attracted considerable attention within the last 30 years. Plant extracts may act both as reducing agents and stabilizing agent ion the synthesis of NPs. Incorporation of green chemistry techniques and methodologies into nanotechnology is of great interest which has gained popularity over the recent decades. This paper is focused on interaction of phytochemical metal effecting bioreduction of phytochemical metal effecting bioreduction of metal ions.

Author keywords

Green synthesis of Nanoparticles | Phytochemicals | Plant extracts

Indexed keywords

Engineering controlled terms: Extraction | Metabolites | Metal ions | Metal nanoparticles | Metals | Reducing agents | Synthesis (chemical)

Engineering uncontrolled terms: Bio reductions | Green chemistry | Green synthesis | Nanoparticle (NPs) | Phytochemical | Phytochemicals | Stabilizing agents | Synthesis techniques

Engineering main heading: Plant extracts

ISSN: 15577910
Source Type: Journal
Original language: English
DOI: 10.1166/jbns.2018.1528
Document Type: Article
Publisher: American Scientific Publishers

Ayeshamariam, A.; Research and Development Center, Bharathidasan University, Thiruchirappalli, India

Document details - Feasibility studies on avocado as reducing agent in TiO ₂ doped with Ag ₂ O and Cu ₂ O nanoparticles for biological applications

Journal of Bionanoscience

Volume 12, Issue 5, 2018, Pages 652-659

Feasibility studies on avocado as reducing agent in TiO_2 doped with Ag_2O and Cu_2O nanoparticles for biological applications(Article)

Manjula, N., Selvan, G., Beevi, A.H., Kaviyarasu, K., Ayeshamariam, A., Punithavelan, N., Jayachandran, M.

[a]Research and Development Center, Bharathiyar University, Coimbatore, 641046, India
[b]Department of Physics, Thanthai Hans Roever College, Perambalur, 621212, India
[c]Research and Development Center, Weifang Conqueren Bioscience and Technology Co., Ltd., Weifang, Shandong Province, 266000, China

View additional affiliations

Abstract

The objective of this article is to deal with the application of nanoparticles synthesized using Ag_2O and Cu_2O were doped with TiO_2. The nanoparticles were synthesized using Avocado fruit extract and their applications were evaluated for antimicrobial with cytotoxic properties. The TiO_2 doped with Ag_2O and Cu_2O nanoparticles were characterized using UV-Vis spectrum, Transmission Electron Microscopy (TEM), Fourier Transform Infrared Spectroscopy (FTIR), Elemental X-ray Analysis (EDAX) and X-ray Diffractometer (XRD) patterns respectively. The both Ag_2O and Cu_2O were doped with TiO_2 nanoparticles were in spherical having size ranging from 45-50 nm, and crystalline in nature. Interestingly, the synthesized material exhibited promising activity against the bacterial pathogens such as Escherichia coli, Pseudomonas aeroginosa, Staphylococcus aureus and Salmonella typhi respectively. In addition, the LC50 value (3.929 mg/ml; with 3.102-5.789 as upper and lower limits respectively) against the cell lines were its advantages. Over all, it is concluded that the synthesized material can be used for better biological applications.

Author keywords

Ag 2 O Doped with TiO 2 | Antimicrobial Activity | Cu 2 O Doped with TiO 2 | Cytotoxic Property | SEM | TEM

Indexed keywords

Engineering controlled terms: Biological materials | Cell culture | Copper oxides | Energy dispersive X ray analysis | Escherichia coli | Fourier transform infrared spectroscopy | Fruits | High resolution transmission electron microscopy | Nanometals | Nanoparticles | Salmonella | Scanning electron microscopy | Silver oxides | Synthesis (chemical) | Titanium dioxide | Transmission electron microscopy | X ray diffraction analysis | X rays

Engineering uncontrolled terms: Ag2O Doped with TiO2 | Anti-microbial activity | Biological applications | Cu2O Doped with TiO2 | Cytotoxic | Staphylococcus aureus | Synthesized materials | X ray diffractometers

Engineering main heading: TiO2 nanoparticles

ISSN: 15577910 **DOI:** 10.1166/jbns.2018.1570

Document details - A comprehensive economical and environmental analysis of the renewable power generating systems for affiliated ANNA university college, Tamilnadu, India

Journal of Advanced Research in Dynamical and Control Systems

Volume 10, Issue 9, 2018, Pages 1337-1346

A comprehensive economical and environmental analysis of the renewable power generating systems for affiliated ANNA university college, Tamilnadu, India(Article)

Vijayarajan, S., Suresh Kumar, U., Elavarasi, K., Mothilal, S.

Department of Electrical and Electronics Engineering, Sethu Institute of Technology, Kariapatti, Madurai, Tamil Nadu, India

Abstract

This paper is to investigate various renewable based hybrid systems with five minimum renewable penetration rates (RPR) for Mohamed Sathak Engineering College, Educational Campus in Anna University, to present the effects of making the system more sensitive to the environment on the total net present cost (NPC) and cost of energy (COE) and also to search for the optimum configuration of the hybrid systems. Yearly wind and solar data are considered in this study. Optimal stand-alone and grid connected hybrid systems with different minimum RPRs, are determined and analyzed in detail by using HOMER software and compared among themselves considering COE, total NPC, emission rates. Additionally, sensitivity analysis is performed to determine the cost of generating the cleaner energy from the hybrid systems. As a result, it can be highlighted that gradual increases in the total NPC and COE occur in the region where RPRs are between 0 and 70%, and that there are dramatic increases in both the total NPC and COE for the RPRs above 70%. Moreover, emission rates for CO_2, $SO_2$and NOx basically decrease as RPR increases from 0% to 90% and they decrease linearly until RPR is 80% while they are nearly zero for the values more than 80%.

Author keywords

Climatic zones | COE Emission | Grid | HOMER | HPS | NPC | NPC | RPF | Solar and wind energy

ISSN: 1943023X
Source Type: Journal
Original language: English
Document Type: Article
Publisher: Institute of Advanced Scientific Research, Inc.

Vijayarajan, S.; Department of Electrical and Electronics Engineering, Sethu Institute of Technology, Kariapatti, Madurai, Tamil Nadu, India;

SciVal Topic Prominence

Topic:

Prominence percentile:

Document details - Impact Response and Damage Characteristics of Carbon Fibre Reinforced Aluminium Laminates (CARAL) under Low Velocity Impact Tests

Materials Today: Proceedings

Volume 5, Issue 9, 2018, Pages 20070-20077

8th International Conference on Materials Processing and Characterization, ICMPC 2018; Hyderabad; India; 16 March 2018 through 18 March 2018; Code 140097

Impact Response and Damage Characteristics of Carbon Fibre Reinforced Aluminium Laminates (CARAL) under Low Velocity Impact Tests(Conference Paper)

Rajan, B.M.C., Kumar, A., Sornakumar, T., Kumaar, A.S.

[a]Department of Mechanical Engineering, Sethu Institute of Technology, Pulloor Tamilnadu, 626 115, India
[b]Department of Mechanical Engineering, Thiagarajar College of Engineering, Madurai Tamilnadu, 625015, India

Abstract

This paper investigates impact response of a novel fibre metal laminate (FML) system based on a carbon fibre reinforced Aluminium Laminates (CARAL). These composites are fabricated using hand lay-up technique and the detailed preparation methodology was presented. Epoxy resin along with TETA hardener was used as the excellent adhesion agent throughout the layer. Three types of layers were prepared from CARAL and machined as per ASTM Standard. Low velocity impact response and damage characteristics of CARAL specimens were studied. Damage characteristics were evaluated using drop weight impact tester. Impact properties of CARAL were increased with the increase in number of layers of CARAL laminates. Finally cross- sectional morphology analysis was done using scanning electron microscope (SEM) and the internal structure of the broken specimen was discussed. © 2018 Elsevier Ltd.

Author keywords

Carbon fibre reinforced aluminium laminate (CARAL) | Fibre metal laminates (FMLs) | Impact Energy | Low velocity impact

Indexed keywords

Engineering controlled terms: Aluminum | Carbon fibers | Epoxy resins | Laminates | Reinforcement | Scanning electron microscopy

Engineering uncontrolled terms: Aluminum laminates | Carbon fiber reinforced | Carbon fiber reinforced aluminum laminate | Fiber metal laminate | Fiber reinforced aluminum | Fibre Metal Laminates | Impact damages | Impact energy | Impact response | Low velocity impact

Engineering main heading: ASTM standards

Funding details

Funding sponsor	Funding number	Acronym
Universiti Malaysia Pahang	PGRS180365	

Funding text

This study was supported by Universiti Malaysia Pahang (UMP) via PGRS180365 .

Document details - Ocular artifact removal techniques in EEG signals

Journal of Advanced Research in Dynamical and Control Systems

Volume 10, Issue 2 Special Issue, 2018, Pages 747-752

Ocular artifact removal techniques in EEG signals(Review)

Elavarasi, K., Mohammed Abdullah, R., Syed Abdul Haq, M.

Sethu institute of Technology, India

Abstract

One of the commonly faced problems in EEG recordings is the presence of artifacts that come from sources other than brain and contaminate the acquired signals significantly. This paper presents a review on understanding all types of EEG artifacts which are incorporated in EEG signals while taking measurements from scalp of the different subjects. Artifacts which are more prominent and occurred very often are 'Ocular artifacts'. Ocular artifacts have a large impact on measurement. A number of methods have been proposed to overcome this problem, ranging from the rejection of data corresponding temporally to large eye movements, to the removal of the estimated effect of ocular activity from the EEG. This paper reviews a number of such methods of dealing with ocular artifact in the EEG, focusing on the relative merits and future works. Many Artifact correction approaches have been developed to provide reliable results of identification detection and removal. © 2018, Institute of Advanced Scientific Research, Inc. All rights reserved.

Author keywords

ANN(artificial neural network) EEG(electroencephalogram) OA(ocular analysis)

ISSN: 1943023X
Source Type: Journal
Original language: English
Document Type: Review
Publisher: Institute of Advanced Scientific Research, Inc.

SciVal Topic Prominence

Topic:

Prominence percentile:

Document details - Internet of things: A research-oriented introductory

International Journal of Ad Hoc and Ubiquitous Computing

Volume 29, Issue 1-2, 2018, Pages 4-14

Internet of things: A research-oriented introductory(Article)

Raja, S.P., Sampradeepraj, T.

[a]Department of Computer Science and Engineering, Vel Tech Rangarajan Dr. Sagunthala R and D Institute of Science and Technology, Avadi, Chennai, Tamil Nadu, India
[b]Department of Computer Science and Engineering, Sethu Institute of Technology, Kariapatti, Pulloor, Tamil Nadu, India

Abstract

The world has shrunk considerably with the dramatic growth in internet usage. Every computer and mobile phone in the world can be connected together through internet technology. As a result, intelligent devices are connected and communicate together. The internet of things (IoT) envisions a future where people and intelligent systems cooperate and work together. In the IoT, machine-to-machine communication (M2M) helps devices exchange data, requiring power, efficiency, security and reliability. This paper advances new ideas for designing a security protocol in the IoT so as to facilitate secure M2M. © 2018 Inderscience Enterprises Ltd.

Author keywords

Architecture | D2D communication | Internet of things | IoT | Protocols | Security

Indexed keywords

Engineering controlled terms: Architecture | Intelligent systems | Machine-to-machine communication | Network architecture | Network protocols

Engineering uncontrolled terms: D2D communications | Intelligent devices | Internet of thing (IOT) | Internet technology | Internet usage | Security | Security and reliabilities | Security protocols

Engineering main heading: Internet of things

ISSN: 17438225
Source Type: Journal
Original language: English
DOI: 10.1504/ijahuc.2018.094393
Document Type: Article
Publisher: Inderscience Publishers

Document details - Multi-criteria decision support for feature selection in network anomaly detection system

International Journal of Data Analysis Techniques and Strategies

Volume 10, Issue 3, 2018, Pages 334-350

Multi-criteria decision support for feature selection in network anomaly detection system(Article)

Seelammal, C., Vimala Devi, K.

[a]Department of IT, Sethu Institute of Technology, Tamil Nadu, India
[b]Department of CSE, Velammal Engineering College, Chennai, Tamil Nadu, India

Abstract

The growth of computer networks from LAN to cloud, virtualisation and mobility always keeps intrusion detection system (IDS) as a critical component in the field of network security infrastructure. Tremendous growth and usage of internet raises concerns about how to protect and communicate the digital information in a safe manner. The market for security solutions for next-generation is rapidly evolving and constantly changing to accommodate today's threat. Many intrusion detection techniques, methods and algorithms are implemented to detect these novel attacks. But there's no clear feature set, uncertainty bounds established as a baseline for dynamic environments. The main objective of this paper is to determine and provide the best feature selection for next generation dynamic environments using multi-criteria decision making, decision tree learning with emphasis on optimisation (contingency of weight allocation) and handling large datasets. Copyright © 2018 Inderscience Enterprises Ltd.

Author keywords

Anomaly | Classification | Data mining | Feature selection | Intrusion detection | Machine learning | Multi-criteria

ISSN: 17558050
Source Type: Journal
Original language: English
DOI: 10.1504/IJDATS.2018.094132
Document Type: Article
Publisher: Inderscience Enterprises Ltd.

Seelammal, C.; Department of IT, Sethu Institute of Technology, Tamil Nadu, India;

SciVal Topic Prominence

Topic:

Prominence percentile:

Document details - Impact of fuel injection advance on combustion and gas emissions in a TBC engine fuelled with honge biodiesel

Ecology, Environment and Conservation

Volume 24, 2018, Pages S32-S36

Impact of fuel injection advance on combustion and gas emissions in a TBC engine fuelled with honge biodiesel(Article)

Muralidharan, K., Rajasankar, M., Balasubramanian, K.A., Senthilkumar, D.

[a]Department of Mechanical Engineering, Sona College of Technology, Salem, Tamil Nadu, India
[b]Department of Mechanical Engineering, Karpagam College of Engineering, Coimbatore, Tamil Nadu, India
[c]Department of Mechanical Engineering, Sethu Institute of Technology, Madurai, Tamil Nadu, India

View additional affiliations

Abstract

In this research work the impact of fuel injection advance on combustion and gas emissions in a thermal barrier coated diesel engine is examined. The engine is fuelled with lower blends of Honge biodiesel extracted from a non-edible oil feedstock by transesterification process and blended with diesel in various proportions from 0-30% in steps of 5% by volume. The engine combustion chamber components including inlet and exhaust valves, cylinder head and piston crown were coated with yttria stabilized zirconia ceramic material over nickel aluminium alloy bond coat for 300 μm thickness. Fuel injection timing was advanced 4° CA from standard injection timing of 23° CA BTDC by changing the thickness of advance shim. Experimental results confirmed that in coated engine biodiesel blend B15 showed significant reduction in carbon monoxide, unburnt hydrocarbon, smoke emission with slight increase of NOx emission than other fuels tested. At part loads, blend B15 shows significant reduction in CO emission of 18.65%, HC emission of 17.24%, smoke reduction of 29% with slight increase in NOx of 5.38% in injection advance of 27 CA BTDC. At peak loads, B15 experienced emission reduction in CO of 10%, HC of 10.4%, Smoke of 9.85% and slight increase in NOx of 2.94%. Diesel posed higher HRR of 46.25 J/deg and higher cylinder peak pressure of 71.456 bar followed by B15 blend of HRR 43.25 J/deg, peak cylinder pressure 67.33 bar in injection advance.

Author keywords

Cylinder pressure | Diesel | Emission | Engine | Heat release rate | Honge biodiesel | Injection timing | Thermal barrier coating

Indexed keywords

GEOBASE Subject Index: alloy | aluminum | biofuel | carbon monoxide | ceramics | coating | combustion | diesel engine | emission control | emission inventory | nickel | research work | smoke

ISSN: 0971765X
CODEN: EECOF
Source Type: Journal
Original language: English

Document Type: Article
Publisher: EM International

Muralidharan, K.; Department of Mechanical Engineering, Sona College of Technology, Salem, Tamil Nadu, India;

SciVal Topic Prominence

Document details - A Schiff base receptor as a fluorescence turn-on sensor for Ni²⁺ ions in living cells and logic gate application

New Journal of Chemistry

Volume 42, Issue 4, 2018, Pages 2865-2873

A Schiff base receptor as a fluorescence turn-on sensor for Ni^{2+} ions in living cells and logic gate application(Article)

Vinoth Kumar, G.G., Kesavan, M.P., Sankarganesh, M., Sakthipandi, K., Rajesh, J., Sivaraman, G.

[a]Chemistry Research Centre, Mohamed Sathak Engineering College, Kilakarai- Tamil Nadu, 623 806, India
[b]Institute for Stem Cell Biology and Regenerative Medicine, Bangalore Karnataka, 560065, India
[c]Department of Physics, Sethu Institute of Technology, Kariapatti-Tamilnadu, 626 115, India

Abstract

A new receptor (R) with easily available "off-on-off" colorimetric and fluorescent responses was synthesized and characterized using ^{1}H NMR, ^{13}C NMR, and ESI-MS studies. It exhibited selective and sensitive detection towards Ni^{2+} ion without having any interference from other tested metal ions. The changes in the obtained photophysical properties are due to the chelation-enhanced fluorescence effect (CHEF) caused by the ligand-to-metal charge transfer (LMCT) that occur after the addition of Ni^{2+} to the receptor. Density functional theory (DFT) calculations have theoretically supported the changes in the examined absorption and fluorescence spectra. Moreover, the receptor could be successfully oriented with the molecular logic functions of OR, AND, NOR, and NOT gates. Furthermore, the receptor efficacy was studied by examining the changes in intracellular Ni^{2+} in the HeLa cells. The receptor has been explored for a possible application in the real sample analysis and a test kit for the detection of Ni^{2+}. © 2018 The Royal Society of Chemistry and the Centre National de la Recherche Scientifique.

Indexed keywords

EMTREE drug terms: nickel, receptor, Schiff base receptor, unclassified drug

EMTREE medical terms: absorption, Article, chemical reaction, colorimetry, density functional theory, fluorescence, HeLa cell line, human, human cell, ligand to metal charge transfer, priority journal

Chemicals and CAS Registry Numbers:

nickel, 7440-02-0

ISSN: 11440546
CODEN: NJCHE
Source Type: Journal
Original language: English

DOI: 10.1039/c7nj03784h
Document Type: Article
Publisher: Royal Society of Chemistry

Rajesh, J.; Chemistry Research Centre, Mohamed Sathak Engineering College, Kilakarai- Tamil Nadu, India;

Prominence percentile:

Document details - A study on the design of thermosyphon evaporator used in nuclear waste volume reduction method

Rasayan Journal of Chemistry

Volume 11, Issue 1, January-March 2018, Pages 307-311

A study on the design of thermosyphon evaporator used in nuclear waste volume reduction method(Article)(Open Access)

Arul Jayan, M.[a], Marimuthu, C.[b], Thiyagarajan, V.[c], Senthil Velavan, S.[a]

[a]Department of Chemical Engineering, Sethu Institute of Technology, Pulloor, Viruthunagar District, India
[b]Chemical Engineering Department, Higher College of Technology, Muscut, Oman
[c]Department of Chemical Engineering, Sathyabama University, Chennai, India

View additional affiliations

Abstract

The volume of High-Level Liquid Nuclear Waste (HLLW), produced during the operation of reprocessing of nuclear waste is very high. These wastes may contain radioactive elements such as Cs, Sr, U, Pu, Ru, etc, Along with their isotopes and many other harmful elements. These HLLW from the plant were sent for permanent storage.The quantity of the waste is high if stored in the waste vault; it required larger tanks and constant surveillance. In this study Thermosyphon evaporator was designed to reduce the volume of the HLLW, and by introducing evaporation process before storing the nuclear waste the study highlights that the total volume is reduced half the original volume. This process of evaporation reduces the total volume to half of its original value with the limitation of its acidity not exceeding 6. Since it is the maximum limit at which the corrosion level is optimum of lesser than 15 mills per year and it exceeds drastically at higher acidity. © RASĀYAN. All rights reserved.

Author keywords

Evaporation | Nuclear waste | Thermosyphon evaporator | Volume reduction

ISSN: 09741496
DOI: 10.7324/RJC.2018.1111964
Source Type: Journal
Document Type: Article
Original language: English
Publisher: Rasayan Journal of Chemistry, c/o Dr. Pratima Sharma

SciVal Topic Prominence

Topic:

Prominence percentile:

Document details - Integration of wind power generators for the enhancement of profit by optimal allocation of SVC

Lecture Notes in Electrical Engineering

Volume 446, 2018, Pages 25-34

2nd International Conference on Intelligent and Efficient Electrical Systems, ICIEES 2017; Coimbatore; India; 20 January 2017 through 21 January 2017; Code 209129

Integration of wind power generators for the enhancement of profit by optimal allocation of SVC(Conference Paper)

Nagalakshmi, S., Rohini, R.C., Balakiruthiha, S.

[a]Department of Electrical & Electronics Engineering, Sethu Institute of Technology, Kariapatti, India
[b]Department of Electrical & Electronics Engineering, Kamaraj College of Engineering & Technology, Virudhunagar, India
[c]Department of Electrical and Electronics Engineering, National Engineering College, Kovilpatti, India

Abstract

Integration of wind power generators with the power grid is an alternate choice to meet out the present energy crisis. Even though wind power generators possess diverse benefits, its intermittent nature causes adverse effects to the entire system. This study proposes an approach to integrate wind power generators in order to satisfy today's energy crisis and also to enhance the profit by optimal allocation of static VAR compensator (SVC). A new population-based optimization technique grey wolf optimizer (GWO), is used to solve optimal power flow (OPF) problem that uses AC load flow equations to minimize sum of generation cost, investment cost of FACTS devices and cost of wind power generation (WPG). To validate the proposed approach, simulations are carried out on IEEE 6 bus system. The results obtained conclude that by applying GWO, profit is enhanced via optimal allocation of SVC along with the wind power generations (WPG). © Springer Nature Singapore Pte Ltd. 2018.

Author keywords

Grey wolf optimizer (GWO) | Optimal power flow (OPF) | Static VAR compensator (SVC) | Wind power generation (WPG)

Indexed keywords

Engineering controlled terms: Acoustic generators | Costs | Electric load flow | Electric power generation | Energy policy | Flexible AC transmission systems | Investments | Profitability | Static Var compensators | Value engineering | Wind power

Engineering uncontrolled terms: Cost of wind power | Investment costs | Optimal allocation | Optimal power flow problem | Optimal power flows | Optimizers | Population-based optimization | Static var compensators (SVC)

Engineering main heading: Electric power transmission networks

Funding details

Funding sponsor	Funding number	Acronym
Water Research Commission	WRCK5/1771//4	WRC

Funding text

Financial support for this study was provided by the Water Research Commission (Project number: WRCK5/1771//4).

Document details - The social preferences of local citizens and spontaneous volunteerism during disaster relief operations

International Journal of Production Research

Volume 56, Issue 21, 2018, Pages 6793-6808

The social preferences of local citizens and spontaneous volunteerism during disaster relief operations(Article)(Open Access)

Gunessee, S., Subramanian, N., Roscoe, S., Ramanathan, J.

[a]Nottingham University Business School China, University of Nottingham Ningbo China, Ningbo, China
[b]School of Business Management and Economics, University of Sussex, Brighton, United Kingdom
[c]Department of Mechanical Engineering, Sethu Institute of Technology, Viruthunagar, India

Abstract

Existing studies on disaster relief operations pay limited attention to acts of spontaneous volunteerism by local citizens in the aftermath of disasters. The purpose of this paper is to explore how social preferences motivate citizens to help during post-disaster situations; above and beyond their own self-regarding interests. The paper begins by synthesising the literature on social preferences from the field of behavioural economics and social psychology with the discourse surrounding behavioural operations management and humanitarian operations management. By doing so, we identify the motivators, enablers and barriers of local citizen response during disaster relief operations. These factors inform a theoretical framework of the social preferences motivating spontaneous volunteerism in post-disaster situations. We evidence facets of the framework using archival and unstructured data retrieved from Twitter feeds generated by local citizens during the floods that hit Chennai, India in 2015. Our model highlights the importance of individual-level action during disaster relief operations and the enabling role of social media as a coordination mechanism for such efforts. © 2017 Informa UK Limited, trading as Taylor & Francis Group.

Author keywords

Behavioural operations management | Disaster relief operations | Social media | Social preferences | Spontaneous volunteerism

Indexed keywords

Engineering controlled terms: Disaster prevention | Economics | Social networking (online)

Engineering uncontrolled terms: Disaster relief operations | Operations management | Social media | Social preference | spontaneous volunteerism

Engineering main heading: Emergency services

ISSN: 00207543
CODEN: IJPRB
Source Type: Journal
Original language: English

DOI: 10.1080/00207543.2017.1414330
Document Type: Article
Publisher: Taylor and Francis Ltd.

Subramanian, N.; School of Business Management and Economics, University of Sussex, Brighton, United Kingdom;