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Journal of Thermoplastic Composite Materia

An investigation on the mechanical and thermal performance of a novel functionally graded materials—based thermoplastic composites

Akant Kumar Singh , Siddhartha

First Published October 9, 2018 Research Article https://doi.org/10.1177/0892705718805124



Abstract

This work investigates the mechanical, fracture toughness, and thermomechanical peculiarity of a novel functionally graded materials (FGMs)-based glass fiber-filled polyamide 66 (PA66) composites. FGMs-based PA66 are fabricated through a particularly designed mold and a punch. Punch is a rotating element of the mold and rotates at 1800 r/min for two min for the fabrication of FGMs. Gradation of fibers takes place in FGMs toward the periphery of the punch cavity due to the centrifugal force. Neat PA66 and homogeneous composites are also fabricated through the same mold for comparative study. Punch remains stationary during the fabrication of neat PA66 and homogeneous composites. PA66 granules filled with 15 wt% and 30 wt% of glass fibers are used to manufacture FGMs and homogeneous composites. Ignition loss test, hardness measurement, and scanning electron microscope (SEM) analysis are used to verify the gradation of glass fibers within FGMs. Result analysis concluded that FGMs performed better as compared to neat PA66 and homogeneous composites. FGMsbased thermoplastic composites have full scope to fabricate polymer gears used in low load applications. This manufacturing route shows a promising potential for fabrication of FGMs-based thermoplastics which otherwise is difficult to-manufacture because of their high solidification rate at room temperature.

Keywords



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IRBM

Volume 40, Issue 2, March 2019,

Original Article

Detection of Seizure Event and Its O Orthonormal Triadic Wavelet Based I

G. Chandel ² △ ☒, P. Upadhyaya ^b ☒, O. Farooq ^c ☒, Y.U. Khan ^d ☒

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https://doi.org/10.1016/j.irbm.2018.12.002

Highlights

- The use of triadic wavelet based features for se
- Long-term EEG signals were analysed.
- The method obtained 99.45% of accuracy and !
- The efficiency compared with existing convent

G. Chandel

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Abstract

Background

Epileptic seizures are unpredictable in nature and its q immediate treatment of patients. In last few decades re



Analog Integrated Circuits and Signal Processing

review



Abdhesh K. Singh, Raj Senani, Ashish Gupta Authors Info & Affiliations

Analog Integrated Circuits and Signal Processing, Volume 97, Issue 2 • November 2018 • pp 281-311

Published: 01 November 2018

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Abstract

During the last three decades, a large number of new analog circuit building blocks have emerged beyond the well-known operational amplifier, operational transconductance amplifier, Current Conveyors and Current feedback operational amplifier. Among the new building blocks, the operational transresistance amplifier (OTRA) has received considerable attention in the literature. This paper presents a state-of-the-art review of the OTRAs, their bipolar and CMOS implementations and applications in linear and nonlinear analog signal processing/generation along with a comprehensive list of references covering the period from 1992 till date.

References

International Journal of RF and Microwave Computer-Aided Engineering / Volume 29, Issue 9 / e21863
REVIEW ARTICLE

Metamaterial-inspired miniaturized antenna loaded with IDC and meander line inductor using partial ground plane

Monika Singh

Navneet Kumar, Santanu Dwari, Pradyot Kala

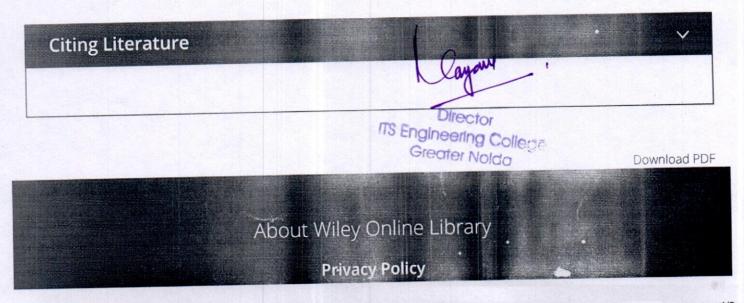
First published: 31 May 2019

https://doi.org/10.1002/mmce.21863

Citations: 4

Abstract

In this article, a novel omnidirectional compact dual band metamaterial-inspired antenna with CPW feed has been proposed for application of GSM 1800 (1.71-1.785 GHz/1.805-1.879 GHz), GSM 1900 (1.85-1.91 GHz/1.93-1.99 GHz), UMTS (1.92-2.17 GHz), WLAN/Wi Fi (4.9, 5, 5.9 GHz), HiperLAN1 (5.15-5.3 GHz), and HiperLAN2 (5.47-5.72 GHz) using a combination of meander line inductor and interdigital capacitor (IDC). The antenna consists of complimentary right/left handed (CRLH) transmission line on both sides of patch to excite zeroth order mode (n = 0). The rectangular slotted stubs act as a virtual ground for the structure using a short circuit condition at the end of the IDC. The zeroth order resonance (ZOR) frequency is mainly controlled by IDC and partially with the meander line inductor. The designed antenna operates from 1.72 to 2.22 GHz and 4.25 to 5.88 GHz with radiating size of $0.56\lambda_0 \times 0.35\lambda_0$ (32 × 20 mm²), where λ_0 is the free-space wavelength at ZOR frequency of 5.27 GHz. The proposed antenna offers measured impedance bandwidth ($|S_{11}|$ <-10 dB) of 25.3 and 18.7% at 1.95 and 5.28 GHz and covers the targeted frequency bands. The proposed structure offers omnidirectional radiation patterns are congruous throughout the working band.



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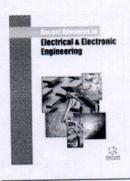
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Published Online: 27 September 2018

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A curious observation of Pauli Blocking in MoS₂-quantum dots/graphene hybrid system

Journal of Applied Physics 124, 124501 (2018); https://doi.org/10.1063/1.5042278

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Amulya Nemoori^{1,a)}, Himanshu Mishra^{2,a)}, Vijay Kumar Singh², P. K. Shukla³, Anchal Srivastava^{2,b)}, and Amritanshu Pandey^{1,b)}

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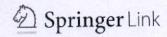
- ²Department of Physics, Institute of Science, Banaras Hindu University, Varanasi 221 005, India ³L.T.S. Engineering College, Knowledge Park-III, Greater Noida 201 308, India
- a) Authors contributed equally.
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In this study, Pauli-Blocking has been observed in a $0D/2D~MoS_2$ quantum dots/graphene (MoS_2 -QDs/graphene) hybrid system. For the observation of room temperature Pauli-Blocking in the 0D/2D system, a photodetector device based on n-type MoS_2 -QDs and CVD grown graphene has been fabricated using a facile and lithography free technique. The current-voltage characteristics of the device have been performed at room temperature. The fabricated device shows a negative response under visible light ($\lambda \sim 400$ to 700 nm) illumination. The dark to photo current ratio of the device shows variation up to two orders of magnitude. This negative response, which results decrease in current under visible light illumination, may be attributed to the Pauli-Blocking due to high absorbance of photon energy in visible light range.

Furthermore, it is believed that the present study may provide an insight

a understanding the Dauli-Riccions in OD /2D hybrid system at room



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Studies on multiferroic oxide-doped PVA-based nanocomposite gel polymer electrolyte system for electrochemical device application

S. L. Agrawal, P. K. Shukla [™], Deepshikha Tripathi & C. P. Singh

lonics 25, 617-626 (2019)

236 Accesses | 4 Citations | Metrics

Abstract

The present work reports development of bismuth iron oxide (BFO)-doped PVA:(NH₄ CH₃COO) nanocomposite gel polymer electrolyte (NCGPE) films. XRD profiles revealed enhancement in the amorphous behavior of composite gel electrolyte upon incorporation of BFO as filler particles. I-t measurements exhibit ionic charge transport. The ionic conductivity of the electrolytes has been evaluated from impedance spectroscopy, and the

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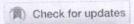
R Lalneihpuii¹, Ruchi Shrivastava², C Lalnuntluanga^{4,1} and Raj Kumar Mishra^{3,1} Published 21 May 2019 • © 2019 IOP Publishing Ltd and SISSA Medialab srl Journal of Statistical Mechanics: Theory and Experiment, Volume 2019, May 2019

Citation R Lalneihpuii et al J. Stat. Mech. (2019) 053202

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Abstract

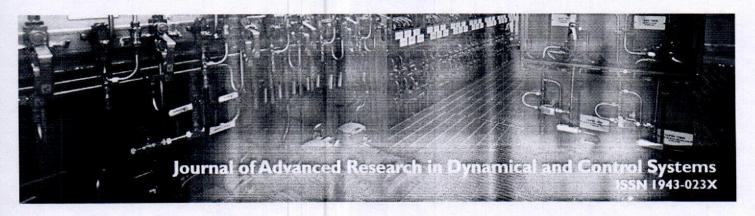
The Bhatia–Thornton (BT) correlation functions namely the number–number, concentration—concentration and number-concentration correlation functions in liquid binary melts are important parameters for and established complexities in binary liquids. In this is appearable microscopic BT correlation functions are investigated using square well (SW) potential under

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Analysing Self - Similarity of Fractal Models Using K-Means Clustering Technique

Sandeep Kumar and Anil Kumar Solanki

Abstract:

actal dimension is a ratio of segments and the scaling factor that provides a statistical index of scriptestity, which shows how details of a pattern changes with different scales at which it is measured. It has also been characterized as a measure of the space-filling capacity of a fractal pattern that specifies how a tractal scales differently from the space it is embedded in. A fractal pattern dimension is not an integer. For the purpose of visualization, it helps whether a fractal has low or high dimension [3]. We shall use the concept of self-similarity of a data set, and the concept can be integrated with clustering techniques. We can use self-similarity of a data set for making faster and better inferences. In this paper, we propose clustering techniques of data mining to analyze the tractal patterns, and show how clustering can be the part of fractals.

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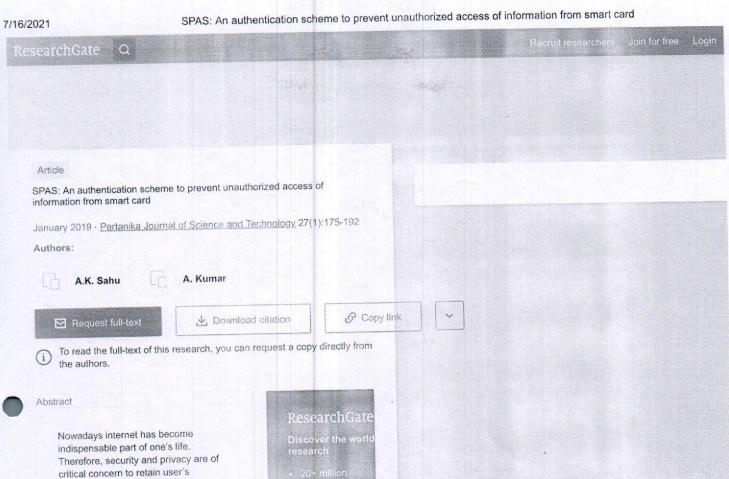
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critical concern to retain user's confidence in network services and applications. Several password verification based schemes/protocols have been used for authentication over insecure channel to protect resources from unauthorized access in networked environment. However, the schemes were not fault tolerant. Also, the feasibility for implementation in some of the applications was questionable. Therefore, we have devised a scheme SPAS (Secure and Provable Authentication Scheme) to overcome the issues prevalent in existing schemes. The objective was to keep the computational and communication cost low. The analysis of the presented scheme SPAS over existing schemes corroborates its effectiveness in tackling various attacks and uniqueness. Further, the performance analysis of the presented scheme is also given to strengthen the proposal.

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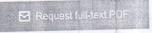
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Novel optimization technique to charge E-rickshaw battery using single sensor based MPPT of SPV module

Issue title: Special Section: Intelligent tools and techniques for signals, machines and automation

Guest editors: Smriti Srivastava, Hasmat Malik and Rajneesh Sharma

Article type: Research Article

Authors: Ansari, Abdul Quaiyum (https://content.iospress.com:443/search?q=author%3A%28%22Ansari, Abdul Quaiyum%22%29)^a | Hasan, Mashhood (https://content.iospress.com:443/search?q=author%3A%28%22Hasan, Mashhood%22%29)^b | Islam, Noorul (https://content.iospress.com:443/search?q=author%3A%28%22Islam, Noorul%22%29)^c: ¹

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Correspondence: [*] Corresponding author. Noorul Islam, Department of Electrical Engineering, Research Scholar, J.M.I., New Delhi, Pin: 110025, India. E-mail: noorul i@hotmail.com (mailto:noorul i@hotmail.com).

Abstract: The battery era has started to compensate the demand of the energy while the charging issues still exist. Thus, demand of reliable and optimized charging is required to charge cell/battery. In this paper novel optimized technique is proposed, based on gravitational search algorithm (GSA) to charge e-rickshaw battery using single sensor based maximum power point tracking (MPPT) of solar photovoltaic (SPV) module. There are various metaheauristic and heuristic techniques are available like Cauchy and Gaussian sine cosine optimization (CGSCO) intelligent technique, evolutionary algorithms, stochastic algorithms, Swarm optimization technique, ant colony technique, neural algorithms, fuzzy logic algorithms to optimize the charging current of cell/battery. These techniques take more iteration to give the optimal solution. Moreover, GSA is the high level intelligent technique which is used in multi area to optimize the various parameters in engineering fields. It is very ease to find the optimal solution in search space. This approach is novel in the field of e-rickshaw battery charging. Therefore, the mathematical algorithm based on GSA has been developed to optimize the current of charging cell/battery. The performance of GSA optimization technique is verified and compared with the metaheauristic based CGSCO optimization technique. It is observed that GSA is easy to design and reduce the cost of charger.

Keywords: Gravitational search algorithm, gravitational constant, boost converter, insolation, agent

DOI: 10.3233/JIFS-169792

Journal: Journal of Intelligent & Fuzzy Systems (https://content.iospress.com;443/journals/journal-of-intelligent-and-fuzzy-systems), vol. 35, no. 5, pp. 5077-5084, 2018

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