A Critical Study of Maya Angelou's *Gather Together in My Name*

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Abstract - Black Women Autobiography started as a subgenre of Black Autobiography in the early 1960's. It was an opportunity to black women to raise their painful voices against their racial and sexual harassments. Maya Angelou, the American poet, memoirist, actor and singer whose several volumes of autobiography explore the themes of economic, racial, and sexual oppression. She is a notable figure in the history of Black American Women Autobiography. She clearly portrays her struggle as a black child and mother in her autobiographies particularly in her *Gather Together in My Name*. It talks about her struggles as a prostitute in an African society. Maya presents herself as a dominant figure and shares her personal experiences, her affection, frustration and pain. It is about the theme, style, language of Maya Angelou in this autobiographical piece. It also deals with the pain and struggle of Maya a strong and courageous woman who is surviving in an Afro-American country.

Keywords: Lesbian, affection, frustration, struggle, self-reflection, prostitution, illegitimate

1. INTRODUCTION

An acclaimed American poet, storyteller, activist, and autobiographer, Maya Angelou was born Marguerite Johnson in St. Louis, Missouri. Angelou has had a broad career as a singer, dancer, actress, composer, and Hollywood's first female black director, but is most famous as a writer, editor, essayist, playwright, and poet.

She published seven autobiographies, three books of essays, several books of poetry, and is credited with a list of plays, movies, and television shows spanning over 50 years. She received dozens of awards and more than 50 honorary degrees. Angelou is best known for her series of seven autobiographies, which focus her entire painful and struggling life.

Gather Together in My Name is of Maya Angelou's second novel. In the novel, Maya Angelou describes her life with her newly born baby, who came out of an impulsive testing of her sexual identity. She chronicles the struggles to reach a promising life and carry both the beauty and the burden of motherhood and womanhood.

2. ANALYSIS

The story begins in the years following World War II. Sixteen year-old Angelou has just given birth to an illegitimate son in San Francisco. She goes through a number of jobs and relationships in search of stability in her life. Each relationship is as disappointing as the last as men take advantages of her. In this journey she went into unsuccessful relationships and came out dissatisfied. The men with whom she developed relationships barring her brother, Bailey and her neighborhood, L. C. Smith and Troubadour Martin whom she saw at her boss's restaurant in Oakland, exploited her physically, financially and psychologically.

In this volume Maya worked as a dancer, a cook, a Madam, a waitress, and briefly as a prostitute. For one of her jobs, Maya becomes a manager for two lesbian prostitutes. Though she was iron-willed and sharp minded, she was unable to keep her life away from her vulnerabilities. Readers sense a tragic decline in her vital strength now and then. The novel depicts how most of the African American women in the urban backdrop are trapped into the world of drugs and prostitution. Maya does not shame about her job and hobbies. Simply she says, "Love is blind and hides a multitude of faults. I know what you're talking about, and prostitution is like beauty. It is in the eye of the beholder" (136).

Throughout her two year life's journey, she encountered many hurdles and failures. She deeply longed for a secure life, but the dream never came true. Her persistence, confidence and human concerns created hope to expand her vision for life. Though she was cheated by Curly, R. L. Poole and L.D. Tolbrook, she

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A Holistic Security Progress in Palmprint Recognition System: Forthcoming Techniques

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Abstract

A Biometric System is an ensured authenticated security system which accesses the precious data in the digital world with the human physical characteristics. Palmprint Recognition System is one the highly accepted biometric system due to its easy acquisition and reliability. The notion of this research work is to survey the last decade research works and evolution of Palmprint Recognition System where the researchers are used the various feature extraction techniques to extract the palmprint features for authentication process and various classifier algorithms to classify the authorized persons for identification process. At ultimately, this survey reveals the most optimized feature extraction approaches and classification algorithms to direct the future research works toward theses methodologies to attain the efficient Biometric Authentication and Identification System for achieving the 100% accuracy and efficient of information security in the digital world.

Keywords: Biometric system, Palmprint Recognition System, feature extraction techniques, classifier algorithms, Biometric Authentication and Identification System.

I. INTRODUCTION

Biometric Authentication and Identification System (BAIS) is the secure and access control applications through which a person's identity is authenticated by using biological data or by scanning some body parts to prevent identity fraud, to tighten the access control of digital information and persons verification in Airports, Schools, private cars, Laptop, shopping Malls, public transports, blood banks, election and refugee registration. Biometric Authentication and Identification system is an emerging and ever changing field of biometric technology whenever a security protocol is required. Biometric authentication and Identification systems rely on a specific data about unique biological traits to implement the authentication and identification process efficiently [1].

Biometric Authentication and Identification system has two key modes: Authentication mode and Identification mode to perform one-to-many and one-to-one comparisons of a captured biometric trait with a specific template stored in a biometric database. The block diagram of the Biometric Authentication and Identification System is shown in Figure.1.

Biometric Authentication and Identification System is using various biometric traits which are become more active in research side over the last few decades. There are several biometric traits in biometric technology: Fingerprint, Facial, Iris, Retina, Hand geometry, Palmprint, Voice, Key stroke, and DNA. Amid the various Biometric traits, Determine which biometric trait is most optimized one in biometric technology to achieve the most effective information and access control security in low cost with more accuracy by measuring and comparing essential characteristics of various Biometric traits. Figure.2, shows several biometric traits used in Biometric Authentication and Identification System.

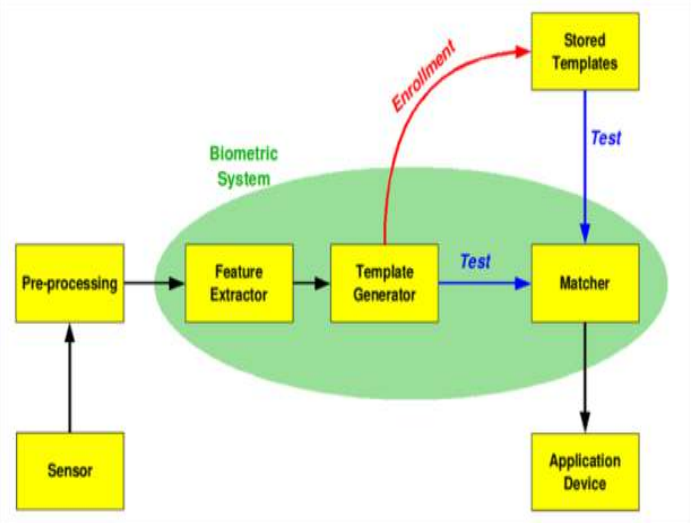

Fig.1. Block Diagram of Biometric Authentication and Identification system

The characteristics of various biometric traits are measured by defining Uniqueness, Permanence, Universality, Measurability, Comparability, Collect ability, Invasiveness, Performance, processing speed, Accuracy, Cost Factor, Ease of use and Circumvention [2].

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A MATHEMATICAL ANALYSIS OF HEAT AND MASS TRANSFER ON MHD BOUNDARY LAYER FLOW

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Abstract: The objective of this paper is to solve a system of highly non-linear differential equation governing MHD boundary layer flow over a moving vertical porous plate. An analytical expression for dimensionless velocity profile, temperature profile and concentration profile has been derived using Q-Homotopy Analysis Method. The impact of velocity, temperature and concentration on varying parameters that are influencing the flow are discussed graphically and compared with the numerical results.

Key Words: Porous plate, Heat transfer, Mass transfer, Non-linear differential equations, Q-Homotopy Analysis Method.

1.Introduction:

MHD free convection flows have noteworthy applications in the field of stellar and planetary magnetospheres, aeronautical plasma flows, chemical engineering and electronics. The summary of the applications are explained by many researchers.[9] made a mathematical analysis of time varying two dimensional natural convective flow of an incompressible, electrically conducting fluid along an infinite vertical porous plate embedded in a porous medium. The unsteady free convection flow past a vertical plate embedded in a porous medium was examined by [11]. The study of heat and mass transfer of the fluid was demonstrated by [2] to [8] under various circumstances.In many situations, such as in geothermal operations, petroleum industries, thermal insulation, design of solid-matrix heat exchangers, chemical catalytic reactors, the transportation of the fluid through porous media and their behaviours during the process plays vital roles. The importance of inertia effects for flows in porous media was discussed by [6]. [14]examined the MHD boundary-layer flow and mass transfer past a vertical plate in a porous medium with constant heat flux. [7] made similarity solutions for boundary

A mathematical study on MHD plane Poiseuille flow in a porous channel with non-uniform plate temperature

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Abstract:

The objective of the paper is to examine the behaviour of plain Poiseuille MHD flow of an electrically conducting fluid when subjected to thermal conductivity and magnetic field. The coupled, non-linear differential equations governing the illustration are solved analytically using Homotopy analysis method (HAM). The effects of velocity and temperature on varying parameters are discussed graphically. Our analytical results are compared with the numerical results and a good agreement is noted.

Keywords:

Magneto hydro dynamic Poiseuille flow; Non-linear boundary value problem; Dimensionless velocity; Dimensionless temperature; Homotopy analysis method.

1. Introduction

MHD flow and heat transfer analysis of fluid through a channel in the presence of thermal and magnetic field plays a vital role in numerous branches of industries and engineering such as MHD generators, MHD pumps, accelerators, purification of crude oil, geothermal energy extraction and so on. The steady plane poiseuille fluid flow under the influence of magnetic field was investigated by [1]. [2] studied the plane Poiseuille flow problem with unequal wall temperature of an incompressible fluid having temperature dependent viscosity. The unsteady flow and heat transfer through a porous medium channel in the presence of a transverse magnetic field was discussed by [3] – [10]. [11] and [12] investigated the characteristics of poiseuille flow in their works. The flow in channels with porous plates was done by [13]-[17]. Whereas the Effects of uniform suction or injection on MHD flow in channels with porous plates were examined by [18] – [26]. Considering various feature of the problem, the present study deals with the effect of variable thermal conductivity on a steady MHD plane Poiseuille flow through non- uniform plate temperature and with constant injection or suction and Joule heating in

A NOTE ON ODD DISTANCE GRAPHS

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Abstract

Let *G(V, E)* be any connected graph. A path is called an odd path if it is of odd length. The odd distance graph *OD(G)* of a graph *G* has the vertex set *V* and two vertices in *OD(G)* are adjacent if and only if the distance between them is odd. In this paper, we prove some results on odd distance graphs. Also we characterise the graphs for which odd distance graph is complete bipartite. In addition, we prove that odd distance graph of almost all graphs are self centered of radius two.

Keywords: odd distance graphs, self centered graphs.

AMS Subject Classification Code(2010): 05C (Primary)

1 Introduction

The graphs taken under consideration in this paper are finite, simple, undirected and connected. For notations and terminology, we follow [5]. Let *n* denote the number of vertices in a graph *G*. A vertex *v* is said to be a *full vertex* if degree of *v* is *n – 1*. The *distance d(u,v)* [6], between any two vertices *u* and *v* is the length of a shortest path between them.

The *eccentricity e(u)* of a vertex *u* is the distance of a farthest vertex from *u*. The *radius rad(G)* of *G* is the minimum eccentricity and the *diameter, diam(G)* of *G* is the maximum eccentricity of the graph *G*. A graph *G* for which *rad(G) = diam(G)* is called a *self – centered graph* of radius *rad(G)*. A vertex *v* is called an *eccentric vertex* of a vertex *u* if *d(u,v) = e(u)*.

The concept of eccentric graphs was introduced in [1] and studied in detail by Chartrand et al., in [7]. The *eccentric graph* G_e of a graph *G* is a graph with vertex set *V(G)* and any two vertices in G_e are adjacent if and only if *d(u,v) = min{e(u), e(v)}*.

The antipodal graphs were introduced and further developed by R.Aravamuthan and B. Rajendran in [2] and [3]. The *antipodal graph* of a graph *G* denoted by *A(G),* is the graph on the same vertices of *G* and two vertices in *A(G)* are adjacent if the distance between them is equal to the diameter of *G*. A graph is said to be antipodal if it is the antipodal graph of some graph *H*.

Inspired by these two concepts, Km. Kathiresan and Marimuthu [8] have introduced a new type of graphs called radial graphs. Two vertices of a graph *G* are said to be *radial* to each other if the distance between them is equal to the radius of the graph.

A Study on Creating a Business Model in Online Banking with Customer Co-creation

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Abstract – In the past few decades, the customer has been silent and hidden such as watching television or listening to lecture. But in present era, the customers do not want to just provide feedback or provide suggestions but also to be a co-designer or co-creator of the products they avail of. The study focuses on appraising customer's preferences for utilizing services of online banking provided by the banks. The present paper deals with the factors influencing the preference of customers for choosing online banking services. The study examines the customer perception, preference, problems and suggestions about online banking services. The study would help the banks to improve the level of online banking and to know potential issues or services that should be introduced. It would also facilitate the customers to overcome the issues in online banking industry by making the customers as the active co-designer or co-creator- by framing an apt business model for online banking.

Keywords: Online banking, Customer preference, Business model.

1. INTRODUCTION

In the present era, most of the organizations are changing their business operations through internet. These business organizations are adopting the advanced technology through internet facility. . Banks cater to the needs of agriculturists, industrialists, traders and to all the other sections of the society. Thus, they accelerate the economic growth of a country. The increased trend towards electronic delivery of banking products and services is occurring due to a combination of consumer demand and the increasingly competitive environment of the global banking industry. Since it is now possible to render all banking services electronically, with adequate security and at lower costs, many banks now feel the pressure to do business through the Internet. Customers are now demanding more customized products /services on online at a lower price. While the banks in developed countries use the Internet to operate as banks without a physical location, banks in developing countries are still using the Internet primarily just as an information delivery tool to improve their relationships with their customers.

2. REVIEW OF LITERATURE:

According to Ahmad and Al-Zu' bi (2011), security had a significant influence on customer satisfaction. Privacy is another important element which always concerns customers. It is always the customers hope that the banks can protect their personal and financial information especially when they do transactions via online banking.

R. Garg, (2013), examined the customer's perceptions towards internet banking facility and also analyzed the customer's satisfaction with various parameters of internet banking services. In total 180 respondents were surveyed to achieve the objective of the study. The study found that perception of customers towards internet banking service quality was largely influenced by the „reliability', 'user-friendliness', 'responsiveness', 'accuracy', 'speed of service' and 'compatibility'.

According to Hanson & Kalyanam (2007), e-banking has popularized with very fast pace. As people have started using ATMs, the customer visits to bank branches have reduced and it reduced the requirement of bank branches even more when internet banking was introduced to the customers in late 1990s.

Tom E (2001) examined that in addition to previous electronic banking delivery systems-automated teller machine (ATMs) and telephone transaction processing centers, online banking provides banks a new and more efficient electronic delivery tool.

A Study on Investors' Attitude towards Effect of Corporate Announcements

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Abstract - Stock market indicators rise or fall of share prices on a particular trading day depends on many factors .The success of an investor in the stock market always depends on how well he is able to incorporate all these factors while taking up his investment decisions. Stock market indicators are extremely used by investors across the world while taking various buy or sell decisions in the market. Any indicator which is used to project future financial and economic trends can be called as market indicators. The efficiency of a stock market is principally measured by its information efficiency which is closely related to the information in stock markets. In this perspective, the present paper investigates the impact of five major company announcements like Dividend, Split, Earnings, Rights and Bonus that are considered being most important by the investors in their investment decision making. The present researchers have applied the factor analysis to know the attitude of investors and level of emotional tolerance towards the company announcements and share market.

Keywords: Information efficiency, Investor Attitude, Company announcements.

1. INTRODUCTION

India's capital market witnessed rapid growth since liberalization in 1991. Financial liberalization had positive decades. Indian capital market was hardly existent in the pre-independence times. Agriculture was the main stay of economy but there was hardly any long term lending to agricultural sector. Similarly, the growth of industrial securities market was very much hampered since there were very few companies and the number of securities traded in the stock exchanges was even smaller. Individual investors were very few in numbers and that too were limited to the affluent classes in the urban and rural areas. There were no specialized intermediaries and agencies to mobilize the savings of the public and channelize them to investment. The role and importance of individual investors and their trading behaviour in Indian stock market is also very crucial. These pieces of information are processed by investors to update their investment strategies. Stock prices move up and down every minute due to fluctuations in supply and demand. If more people want to buy a particular stock, its market price will increase. Conversely, if more people want to sell a stock, its price will fall.

Investors consider several things before they invest their funds in any particular securities. Among them, so far the most important subject matter is return from investment in securities that partly depends on company announcements in the stock market. The present study deals with the five major company announcements like: **Dividend, Bonus, Rights Issue, Splits and Earnings report.** This paper is based on the scholar's Ph.D. thesis

2. STATEMENT OF THE PROBLEM

The effect of sensitive information on market price of stock is the subject matter of the study. At this juncture, the present study captioned "Effect of Company Announcements and Role- of Media on Prices of Stocks Listed at NSE" attempts to answer the following research questions that arise with reference to the selected announcement from the companies listed at National Stock Exchange.

1. Which media is mostly preferred by the investors to receive the company announcement?
2. What types of announcement do the investors prefer to gain their expected return on their investment?

3. OBJECTIVES

(i) To analyse the impact of investors' attitude on corporate announcements

(ii) To examine the factors affecting their level of emotional tolerance towards corporate announcements.

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A STUDY ON MEASURING SERVICE QUALITY IN SOUTHERN RAILWAY ZONE.

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Abstract

For several years the Indian Railway (IR) keeps its passenger fare low and cross subsidized the loss-making passenger traffic with profit earning freight traffic. Under the modern consumerism, passengers of rail transport are craving for quality service from the IR. The Railway Board has to ponder over the features of service quality of IR where for mass movement of men and materials, rail transport is highly suitable; but this must be accompanied by quality train service with safety and convenience in travel. Considering the above aspects, the present study titled "A study on Measuring Service Quality in Southern Railway zone." has assumed greater significance than ever before.

Keywords: Indian railway, Southern Railway one, Service Quality, Passenger expectation, Madurai division.

Introduction

[1]In a year, 700 crore passengers travel in Indian railway; while 1.3 crore passengers travel in IR daily, 1.2 crore of them travel in the unreserved Coaches. Southern railway (SR) a key zone of Indian railway was [2]formed in April, 1951. Head quartered in Chennai, it has the following six railway division – Chennai Tiruchirapalli, Madurai, Palghat, Salem and Trivandrum.

[3]Madurai railway divisions was formed in 1856; it spans over 1,356 kms making it the largest division of SR. At [4]present, the Madurai division covers twelve districts of Tamilnadu and one in Kerala and these districts are Coimbatore, Dindigul, Karur, Madurai, Pudukottaai, Ramanathapuram, Sivagangai, Theni, Thoothukodi, Tiruchirapalli, Thirunelveli and Virudhunagar in Tamilnadu State and Kollam district till Kilikollur railway station in Kerala State. [5]SR operates daily 1313 trains where more than 50 crore passengers travel in a year.

A Survey of the State-of-the-Art of Fingerprint Classification

K.S. Jeyalakshmi and T. Kathirvalavakumar

Abstract

In this digital era, authentication is essential for each and everything. Authentication process uses fingerprint as the best biometric because of its ease of use and uniqueness. Fingerprint classification plays a major role in any fingerprint matching system. This paper reveals the state-of-the-art of some fingerprint classification methods. In this paper, various methods used for feature extraction and fingerprint classification are analyzed.

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AN L-FUZZY α- SUPRACONTINUOUS IN α-SUPRATOPOLOGICAL TM- SYSTEM

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ABSTRACT

In 2010, Tamilarasi and Megalai introduced a new class of algebras called as TM-algebras. In this paper, we discuss the notion of An L-Fuzzy α-Supracontinuous in α- Supratopological TM-system.

AMS Classification: *54A40, 03E72, 06F35.*

Key words: *BCK/BCI Algebra, TM-Algebra, Fuzzy set, Fuzzy Topology.*

1. INTRODUTION

Recently in 2010, Tamilarasi and Megalai introduced a new class of algebras, called TM-algebras [12]. In their paper they investigated the relationship between TM-algebras and other algebras.They claimed that the TM-algebra is a generalization of BCH /BCK/BCI and Q algebras.

In 1965, L.A.Zadeh [14] introduced the notion of fuzzy sets, to evaluate the modern concept of uncertainty in real physical world. In the notion of fuzzy sets, the boundaries are not crisp or sharp but flexible. In 1967, J.A.Goguen [8] introduced the concept of L- fuzzy sets.

The theory of fuzzy topological spaces is developed by Chang [6], Wong [13], Lowen [9] and others. Mashhour *et al* [10] introduced the concepts of supratopological spaces. In 1987 M.E.Abd El-Monsef and A.E.Ramadan [11] introduced fuzzy supratopological spaces. R.Devi, S.Sampathkumar and M.Caldas [7] introduced supra α- open sets and S α- continuous functions.

In [1], we studied Fuzzy Topological subsystem on a TM-algebra. In [2], we studied L- Fuzzy Topological TM-system. In [3], we studied L- Fuzzy Topological TM-subsystem. In [4], [5] we studied Fuzzy Supratopological TM-system, Fuzzy α-supracontinuous functions. In this paper, we discuss the notion of An L-fuzzy α-supracontinuous in α-supratopological TM-system and investigate some simple properties.

2. PRELIMINARIES

In this section we recall some basic definitions that are required in the sequel.

Definition 2.1: Let X be a non-empty set. A mapping $\mu: X \to L$ is called an L-fuzzy set of X, where L is a complete lattice, with sup 1 and inf 0.

Definition 2.2: Let A and B be any two fuzzy sets in a non-empty set X.

(1) The union of A and B denoted by, AUB is defined to be the L-Fuzzy set $(AUB)(x)=\mu_A(x)V\mu_B(x)$ for all $x\in X$.
(2) The intersection of A and B, denoted by, $A\cap B$ is defined to be the L- fuzzy set $(A\cap B)(x)=\mu_A(x)\Lambda\mu_B(x)$ for all $x\in X$.
(3) $A\subset B \Rightarrow A(x)\leq(B)x$ for all $x\in X$.
(4) The Complement of A is defined to be A' (x) =1- A(x) for all $x\in X$

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ANTIBACTERIAL ACTIVITY OF SELECTED SPICES AGAINST MULTI-DRUG RESISTANT URINARY TRACT MICROFLORA

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Abstract

Now a days, Urinary tract infections (UTIs) are one of the important bacterial infections seen in hospitals. In this study, the pathogens were isolated from urine samples of urinary tract infected patients. The antibacterial property of ethanol extract of selected spices was tested against the urinary tract pathogens. *Allium sativum* ethanol extract greatly inhibited the growth of all urinary tract pathogens. Antibacterial assay of selected commercial antibiotics showed that isolated organisms were found to be resistant against the antibiotics. It can be concluded that *Allium sativum* extracts revealed effective antimicrobial compounds against resistant UTI pathogens

Key words: *Allium sativum*, antibacterial, UTI pathogens etc.

Introduction

Urinary tract infection (UTI) is a collective term that describes any infection involving parts of the urinary tract, namely the kidney, ureter, bladder and urethra. Urinary tract infections (UTIs) are responsible for nearly 10 million doctor visits each year. One in five women will have at least one UTI in her lifetime. It is a familiar contamination among men and women but the frequency is quite elevated in women due to their physiology. It is a common source of infection in children and infants and is the most common bacterial infection in children < 2 years of age, both in the community and hospital setting (Hanna-Wakim *et al*., 2015). In the urinary tract infection, bacteria get into the urinary tract (the bladder), multiply and adherence to the uroepithelium. The result is redness, swelling and pain in the urinary tract (https://www.kidney.org/sites/default/files/uti.pdf). Frequent use of several antibiotics has been made bacteria to develop resistance in their population which have become a burning predicament. However, with the increased resistance among uropathogens and changes in the prevalence of UTI-causing organisms, new guidelines have emerged (Tan and Chlebicki, 2016). As a result there is an urgent need to find the alternative of chemotherapeutic drugs in diseases treatment particularly those of plants origin which are easily available and have considerably less side effects (Khulbe and Sati, 2009). Spices are important natural products, which have been used since ancient times and until now. Spices have been used for not only flavor and aroma of the foods but also to provide antimicrobial properties (Nanasombat *et al.,* 2002). Some of the natural compounds found in various spices possess antimicrobial (Indu *et al.,* 2006). Grohs and Kunz (2000) observed that spices mixtures were able to inhibit the growth of various meats spoiling microorganism. The

Approximate analytical expressions of a boundary layer flow of viscous fluid using the modified Homotopy analysis method

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Abstract:

The paper investigates the boundary layer flow of incompressible viscous fluid by solving the governing differential equations analytically using modified Homotopy analysis method. The effects of parameters Prandtl number and Eckert number on the flow are discussed and analyzed graphically. A comparison with the previous results shows a very good agreement.

Keywords:

Viscous fluid; Non-linear differential equations; Prandtl number; Eckert number; Modified Homotopy analysis method.

1. Introduction

The boundary layer flow of an incompressible viscous hydrodynamic fluid has attracted considerable attention during the last few decades due to its numerous applications in industrial manufacturing processes. The present study deals with the heat transfer flow of hydrodynamic viscous fluid over a flat fluid over a flat plate in a uniform stream of fluid with dissipation effect. The non-differential equations representing MHD flows are solved numerically and analytically by many Researchers [2]-[6].

Salah et.al., [1] performed numerical method to solve the system of non-linear differential equations. In this paper, modified Homotopy analysis is applied to solve the equations and the obtained results are compared with the numerical results. Graphs obtained on varying the governing parameters are also discussed in detail.

2. Mathematical formulation of the problem

The governing equations are given as:

$$\frac{\partial u}{\partial x}+\frac{\partial u}{\partial y}=0 \tag{1}$$

$$u\frac{\partial u}{\partial x}+v\frac{\partial v}{\partial y}=\in\frac{\partial^2 u}{\partial y^2} \tag{2}$$

Automated Blog Classification using Rule Extraction by Reverse Engineering the Neural Network

K. Aruna Devi and T. Kathirvalavakumar

Abstract

Blog content classification is a process of analyzing the blog posts and label with a predefined category which helps the search engine to improve searching and marketing. However, the effort is time consuming and error prone as the blogosphere is an open and growing domain. The state-of-the-art blog classification is influenced by the supervised methods which uses the ample corpus vocabulary as feature set demanding extensive memory space to classify. The intense usage of memory space affects the training and processing time of the classifier. To address the issue, Automated Blog Classification using Rule Extraction by Reverse Engineering the Neural Network (RxREN) is proposed which does multi stage feature reduction and classification using ANN. The proposed classification framework reduces the features in the first stage; patterns in the second stage and configure ANN according to the reduced dataset using N2PS pruning algorithm. In neural networks the knowledge generated from the input data is more precise but generally not descriptive. The symbolic rules can be derived to expose the knowledge built inside the ANN configuration. Hence using Reverse Engineering the Neural network (RxREN) the rule extraction is performed after the blog classification training. The extracted rules are used directly to classify the dataset. The proposed methodology results on a benchmarked dataset proved to be quite efficient in terms of average predictive accuracy and speed when compared with the existing methodology.

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Biological evaluation, molecular docking and DNA interaction studies of coordination compounds gleaned from a pyrazolone incorporated ligand

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Abstract

In this work, we have synthesized a few novel mononuclear complexes of Cu(II), Co(II), Ni(II) and Zn(II) using a pyrazolone-derived Schiff base ligand. They were characterized by spectroscopic and analytical methods. The elemental analyses, UV-Vis, magnetic moment values and molar conductance of the complexes reveal that the complexes adopt an octahedral arrangement around the central metal ions. The interaction of complexes with CT-DNA was studied by absorption spectral titration and viscosity measurements. The observed data show that the complexes bind with CT-DNA *via* an intercalation mode. Efficient pUC18 DNA cleavage ability of the synthesized compounds was explored by gel electrophoresis. The antimicrobial activity of these compounds against a set of bacterial and fungal strains reveals that the complexes exhibit better activity than the free ligand. Moreover, all the complexes were evaluated against two cancer (HeLa and HepG2) and one normal (NHDF) cell lines. The data were compared with cisplatin. Anti-inflammatory activity has been experimentally validated which proves that theoretical predictions concur with the experimental results. In addition, molecular docking studies have been performed to consider the nature of binding mode and binding affinity of these compounds with DNA (18NA) and protein (3hb5). These studies reveal that the mode of binding is intercalation and the complexes have higher binding energy scores than the free ligand.

Keywords: Anti-inflammatory activity; DNA interaction; MTT assay; Molecular docking.

CARDIAC DISEASE ANALYSIS AND DETERMINATION USING DISCRETE WAVELET-BASED ANN

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Abstract: Diagnosis of heart disease is complex. ECG plays an important role inthe analysis and diagnosis of cardiac disease. Normally ECG signals are affected by different noises and analysis of those signal is also a tedious process.The main objective of the paper is to de-noise and analyze the ECG signal using DWT(Discrete Wavelet Transform) technique. We use the Daubechies wavelet analysis (level 5)technique in DWT for better performance. Then we obtain the decomposed wave.By analyzing the parameters of the decomposed ECG signal we find the disease present in the heart of the patient by applying the decomposed parameters to ANN(Artificial Neural Network). Thus, we can identifythe cardiac disease. This method is very effective because the accuracy of the result is high. Also, the training and testing of the network take very less time. Hence, it is more effective for users.

Keywords: ECG, Cardiac disease, Discrete wavelet transform (DWT), Daubechies wavelet analysis, Artificial neural network (ANN)

I. INTRODUCTION

In recent times, computer-assisted ECG interpretation plays an important role in the automatic diagnosisof heart abnormalities.ECG is the recording of the electrical activity of the heart, and generation of signals. The classification ECG performance strongly depends on the characterization power of the extracted features from the ECG data and the design of the classifier [3]. The paper describes preprocessing, processing, Feature Extraction, and Classification of ECG signal. An ECG is a linear graphical recording of the electrical impulses that are generated in the heart during the cardiac cycle.The electrical impulses are measured by the electrodes that are placed on the skin.Electrodes which are placed on different sides of the heart measure the activity of different parts of the heart muscle.The ECG displays the voltage between pairs of these electrodes and the muscle activity that they measure.This indicates the overallrhythm of the heart and abnormalities that are present in different parts of the heart muscle [10].

In ECG terms, a lead is a combination of electrodes that form an imaginary line in the body from, wherethe electrical signals are measured [10].

In a 12 lead ECG, three groups of leads can be used, each looking at different aspects of the heart:

- Bipolar limb leads
- Unipolar limb leads
- Unipolar precordial (chest) leads.

Each lead records the electrical signals from the heart of the patient, combination of recording electrodes which are placed at specific points on the patient's body [The bipolar limb leads are known as the lead I, lead II and lead III. They are also known as standard leads [10].They are placed on each of the patient's arms and legs. These bipolar leads view the frontal plane of the heart from these two points.Like the bipolar leads, unipolar limb leads also record the electrical activity along the heart's frontal plane, but from a different angle [10].The unipolar precordial leads these leads are placed directly on the chest and view the heart's electrical activity in the horizontal plane.

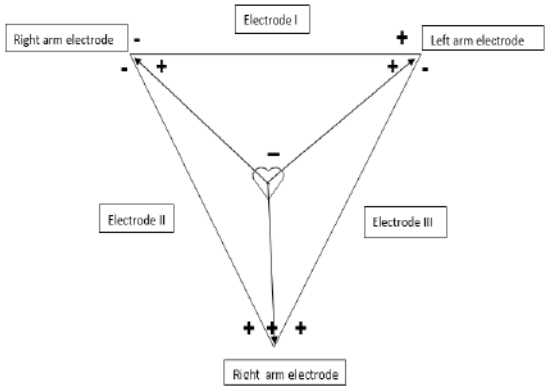

Fig. 1 Placement of ECG electrodes.

II. ECG INTERPRETATION

Now, let us look about the parameters that are to be noticed in an ECG waveform. The following wave shows the normal ECG waveform with the parameters marked in it.

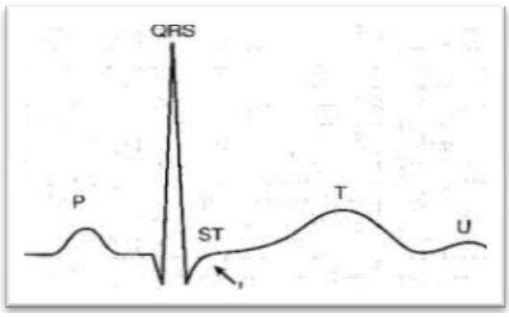

Fig. 2 ECG signal

The P wave is positive in most leads, which means it's above the baseline, on the ECG Signal.The PR interval startsfrom the beginning of the P wave and ends at the beginning of the QRS complex.The QRS complex on an ECG represents the electrical activity associated with the activation of the heart's ventricles, it may have three components:

Caste Clashes, Conflicts and Struggles in Bama's *Vanmam* (Vendetta)

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Abstract - Dalit Literature is a literature about Dalit's protest, pain and agony. Most of the Dalit Literature is the voice of the voiceless in the caste-rooted Indian society. Bama is a celebrated dalit woman writer. Vanmam (2002) is the third novel of Bama which brings out the issue of caste incited by the upper-caste Naickers between the two sub-castes in Dalit community- Pallars and Parayars at Kandampatti village. The loss on both sides makes them understand the role of the upper castes and state machinery, especially the police who immortalize their animosity. Towards the end of the novel the sub-castes of Dalits put an end to their vendetta and they are united. Since then they lived together in mutual tolerance and friendship. The novel mirrors inter caste rivalry in Dalit communities in India in general and in Kandampatti village in particular. This paper explores the caste clashes, conflicts and struggles among the Dalits and how they are used by the uppercaste people in promoting the animosity among themselves.

Keywords: Voice of Voiceless, Dalit, casteism, annihilate, downtrodden, underdogs, discrimination, enlightened

1. INTRODUCTION

Bama is one of the Dalit women writers, who have been actively involving in social issues, particularly Dalit issues in India. This novel is differentiated from her earlier novels as it focuses the involvement of the church and Christianity which empowered the Parayars community towards the rational thinking. Bama retains her critique of casteism in the church and also portrays the Dalits as more assertive in this novel than the earlier ones. Among the contemporary Dalit writers, Bama, the nun-turned social activist has carved a niche for herself as a powerful voice of the voiceless underdogs. Bama in her popular autobiographical novel *Karukku* (1992), records the harrowing experiences she has undergone as a woman as well as a Dalit nun. What is the most appalling in the work is her startling revelation of discrimination in the Church and the institutions, a subject hitherto unexplored. Her other major works are *Sangati* (1994) and *Kusumbukkaran* (1996). Bama's *Vanmam* (meaning vendetta) translated into English by Malini Seshadri, strikes a chord in Dalit writing. Unlike her earlier works, many of the Dalit writings, in *Vanmam,* Bama instead of blowing up the agonies and sufferings of the downtrodden, she loudly raises her voice and vehemently asserts the need for the unity and solidarity of the suppressed for a better future.

2. VANMAM

Bama's *Vanmam* (Vendetta), which first appeared in Tamil in 2002, is not the usual novel of atrocities against Dalits, though atrocities are depicted, particularly the brutality of the police against women when they cannot vent their rage on the absconding men. But rather than focus on violence, it strikes at the heart of one of the most problematic aspects of Dalit identity: the enmity that frequently exists among different Dalit castes themselves. The protagonists here are two Dalit castes, Parayars and Pallars, in Kandampatti village of Tamilnadu. The Parayars are Roman Catholics and the Pallars are Hindu, identifying themselves as DKVs or Devendra Kula Vellalar. The Parayars' Christianity influences them to the extent that they are on the one hand more assertive, and on the other hand appear more ready than the Pallars to talk of humanity, forgiveness and compromise. The Pallars are portrayed as the victims of Hindu discrimination and caste feeling which make them susceptible to be used by Naickers.

3. COMMUNITY FIGHT: NAICKERS MAKE CONFLICT AMONG DALITS

The other large Dalit community, the Chakkuliyars, appear only by name; they are not portrayed in all the events that are depicted. The Naickers appear occasionally, but they

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ORIGINAL ARTICLE

Chemical and pharmacological aspects of novel hetero MLB complexes derived from NO_2 type Schiff base and N_2 type 1,10-phenanthroline ligands

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KEYWORDS

Schiff base ligand;
1,10-Phenanthroline;
Hetero ligand complexes;
Spectral characterization;
Pharmacology studies;
3D modeling

Abstract A series of hetero ligand MLB complexes (**1**–**5**) were synthesised from tridentate NO_2 type Schiff base [$\mathbf{H_2L}$: (*E*)-2-((2-hydroxy-4-methoxyphenyl)(phenyl)methyleneamino)benzoic acid; derived from 2-hydroxy-4-methoxybenzophenone and 2-aminobenzoic acid] and bidentate N_2 type 1,10-phenanthroline (**B**: phen) ligands. The structural characterization of the synthesised MLB complexes were carried out *via* analytical as well as various spectral studies. Additionally, the low molar conductance values (Λ_m = 14–22 Ω^{-1} cm^2 mol^{-1}) imply that the complexes (**1**–**5**) are non-electrolytes. The obtained results reinforce that stoichiometry of the mononuclear hetero ligand complexes can be represented as [M(II)-Schiff base(L)-phen(B)·H_2O] and both $\mathbf{H_2L}$ and (**B**) ligands can act as tri and bidentates respectively. Moreover, both the ligands bind with metal(II) ions to build a stable six, six, five membered chelate rings with octahedral geometry. The existing solvent water molecule is confirmed from thermal as well as vibrational analysis. Their microcrystalline nature and uniform surface morphology were confirmed by both powder XRD and SEM studies. 3D molecular modeling and analysis of NiLB and CuLB complexes (**3** and **4**) were also studied. Mn(II), Ni(II) and Cu(II) complexes (**1**, **3** and **4**) strongly interact with DNA through intercalation binding with strong binding constant values. The obtained K_{app} values were 5.23, 4.98, 6.36, 7.21 and 4.86 × 10^5 mol^{-1} for MLB complexes (**1**–**5**) respectively and the negative $\Delta^{\ddagger}G$ values shown that

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Classification of Dengue Serotypes Using Gini-index based Feature Selection and Rule Extraction from Neural Network

Pandiselvam Pandiyarajan and Kathirvalavakumar Thangairulappan

Abstract

Machine learning algorithms are used to diagnose the dengue based on the symptoms, climate risk factors, patients' records and gene sequence of the patients. These methods are used to diagnose the dengue in later stages. If the structure of the protein is known then it would be easier for the biologist to classify the serotypes based on the function of the protein. However, it is still costly to know the structure of the protein. Sometimes these methods could not correctly classify the dengue serotypes. To overcome these problems, this paper proposes the stable and low-cost method for classifying dengue serotypes based on amino acids in the protein sequences. The proposed method uses Gini-index and information gain for feature selection and rule extraction from the neural network for classifying dengue serotypes. It also identifies the most significant amino acids for the cause of dengue. Results of the experiments show that the proposed method classifies 96% of the dengue serotypes correctly by simple extracted rules and identify the cause amino acids for the dengue. The result of this paper is useful to the drug designer. The proposed method classifies dengue serotypes easily also to the children as it needs only the protein sequence which can be obtained from nail or hair.

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Competence of Academic Administrators Virudhunagar District in Identifying Emotions: A Delineation

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Abstract – Emotional Intelligence is the ability to acquire and apply knowledge from one's emotions and the emotions of others in order to be more successful and lead a more fulfilling life. The ability to accurately recognize emotions is the most basic Emotional Intelligence skill. This basic aspect of Emotional Intelligence involves recognizing and correctly identifying emotion in people and the world around them. Identifying emotions is important because the better the emotional read one has on a situation, the more appropriately one can respond. The main objective of the study is to know the ability of awareness of Academic Administrators in identifying emotions. In order to find the relationship between the Experience and aware of their own emotions, a one way ANOVA test was employed. In order to find the relationship between the Age and Understanding Others' Emotions of the respondents, a Chi-square test was employed. In order to find the relationship between the Age of the respondents and the opinion about the importance of identifying emotions, a One way ANOVA test was employed.

Keywords: Emotional Intelligence, Identifying Emotions, Emotional Cue

1. INTRODUCTION

Emotional Intelligence is the ability to acquire and apply knowledge from one's emotions and the emotions of others in order to be more successful and lead a more fulfilling life.[1] It is the capacity for recognizing one's own feelings and those of others, for motivating ourselves, and for managing emotions well in us and in our relationships. It can also be defined as a set of abilities that help us respond to the world around us appropriately.[2]

Emotional intelligence is the intelligent use of emotions. Most people have trouble in managing situations that are emotionally charged, especially when the emotions aroused are anger and anxiety.[3] When this difficulty is accompanied by, or causes poor communications skills, then people really do get into trouble. Those individuals who are able to handle their emotions, not just the expression or regulation of them, but who are also able to generate the kinds of emotions that are productive and efficient, are indeed emotionally intelligent.

It is not possible to leave one's emotions at home. Hence people carry emotions with them and a smart manager needs to tackle the emotions of the employees intelligently. People vary enormously in the skill which they use to manage their own emotions and the emotions of others - and that can make the difference between a good manager and a bad one.[4] Most of the professionals, managers and executives are fairly smart people but there can be huge difference in how well they handle people. That is, the manager may be a genius in technical, product or service knowledge-but get fail marks in terms of the skills in handling people.

Emotional Intelligence helps in the empowerment of individuals to be at their best as it enables them to understand their own and others' emotions too. Everyone experiences and relates to feelings and emotions. Even the world around us communicates and sends emotional messages. Emotions contain valuable information about relationships and about the world around us. This ability to perceive emotions starts with being aware of these emotional clues, and they mean.

Emotional Intelligence is one of the contemporaneous approaches that are helping individuals to increase their ability to be aware of their emotions. This approach also helps them to balance their emotional and rational mind. Emotions are just concepts which are energized by feelings. The concept introduces the factor of mind and so each emotion has its own cluster of ideas associated with it. Once a person learns to identify his full range of major emotional responses, then he can use them to

Customer Satisfaction towards Supermarkets in Rajapalayam

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Abstract – Customer satisfaction has been considered as the one of the important aspect for the survival of business in the competitive market. In the organized retail market, it has becomes necessary to identify whether the customers are satisfied towards various attributes of products and ambience available in the supermarkets. Customer satisfaction has superior power and influence on any firms marketing strategy. It is through offering of variety of products, pricing products competitively, providing more parking space the satisfaction of customers that firms remain growing and develop in a successful way.

Keywords: Customer; Customer Satisfaction; Supermarkets.

1. INTRODUCTION

Supermarket shopping is often categorized as a self-service retail environment. For supermarket retailers wanting to build relationships with their customers, being able to track their levels of 'satisfaction' with the key elements of the supermarket environment is extremely important. From the retailer's perspective the aim is to minimize the reasons for complaints and dissatisfaction and the cost of a service recovery plan whilst establishing a track of direct feedback from customers about their reactions to those key elements. Satisfaction is a consumer's post-purchase evaluation of the overall service experience. It is an affective reaction in which the consumer's needs, desires and expectations during the course of the service experience have been met or exceeded. Satisfaction in this sense could mean that a supermarket has just barely met the customer's expectations, not exceeded nor disappointed those expectations. The benefits of taking the customer's response beyond satisfaction at this level by exceeding expectations, is a competitive strategy many retailers aspire to achieve. Under this background the present study was designed to investigate customers' satisfaction levels with a range of key elements that contribute to the retail offer presented by Supermarkets in Rajapalayam.

2. STATEMENT OF THE PROBLEM

In a competitive marketplace, the challenges are the supermarkets' retailers need to improve the customers' satisfaction and the most importantly to have better understanding about those supermarkets' attributes that are most considered by customers. Therefore, it is essential for the supermarkets' retailers to equip and enhance themselves to improve customer satisfaction with reference to key attributes of the supermarket to stay ahead of competition.

One of the key challenges faced by the supermarket in the study area, is the competition from unorganized sector. Unorganised sector and traditional retailing is the low cost structure, minimum rental cost and with little taxes to pay. At the same time the supermarkets has huge expenses to meet and yet have to keep the prices low enough to compete with the traditional sector. The supermarkets are meeting these expenses through increased turnover only in order to achieve increased turnover and customer must be satisfied with the mode of operation of the supermarkets in Rajapalaym.

3. SCOPE OF THE STUDY

This study helps us to know the current customer satisfaction, preference and problems of the customer that they are facing today in supermarket. This study has to be effective for the survey of the supermarket and as well as manufacturers. The study focuses only 8 supermarkets in Rajapalayam. The researcher has made a sincere attempt to study the services offered by that supermarkets in Rajapalayam only.

Customers' Satisfaction with Banking Codes and Standards Board of India's Information: A Study with Reference to Virudhunagar District

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Abstract - "*Quality in service product is not what you put into it. It is what the client or customer gets out of it – Peter Drucker*"

The present study tested a theoretical model considering banking customer' personality traits as predictors of bankers – customer' relationship with Banking Codes and Standards Board of India's (BCSBI's) information, the perception of customers among their awareness and satisfaction about BCSBI's information. Bank customers were surveyed in Virudhunagar district with sample respondents 1552 in number from eight taluks. BCSBI's information is the process of adapting to the role of being a customer and to various aspects of the banking transactions environment. Failure to banking service can lead to mental health issues, customer's complainants and follow up to grievances, they have to bring to banking ombudsman. There may arise unnecessary problems for the bankers and their customers. In order to avoid the problems, the bankers and the customers have to adhere to the code of bank's commitment to customers of BCSBI. The present study focuses on customers' satisfaction with the aspects of BCSBI's information.

Keywords: BCSBI, RBI, Code of bank's commitment to customers.

1. INTRODUCTION

An independent and autonomous watch dog to monitor and ensure that the Banking Codes and Standards adopted by the banks are adhered to in true spirit while delivering their services. The idea came out of S.S.Tarapore committee recommendations to improve the quality of banking services to individual customers. The code is not only meant to provide protection to the individual customers, but is also expected to generate awareness for the common man about his rights as a consumer of banking services.

2. RESEARCH QUESTIONS

a) What is customers' level of knowledge of and satisfaction with the commercial banks on the code of banks' commitment to customers of BCSBI's information?

b) What are the factors that affect the aspects of BCSBI's information related to the personal profile of the customers?

3. OBJECTIVES OF THE STUDY

a) To find out average score of overall knowledge is and satisfaction with the aspects of BCSBI's information with respect to the personal profile of the respondents.

b) To find the significance of association between the personal profile of the respondents and level of overall knowledge and satisfaction of BCSBI's information.

4. HYPOTHESIS

a) **H_0:** There is no significant difference in the average score of overall knowledge in the aspects of BCSBI measures with respect to the personal profile of the respondents.

b) **H_o:** There is no association between the personal profile of the respondents and the level of overall knowledge of BCSBI's information in the banking sector.

c) **H_0:** There is no significant difference between the average scores of satisfaction about BCSBI measures and the personal profile of the respondents.

d) **H_o:** There is no association between respondents' opinion about the level of satisfaction with the aspects of BCSBI's information and their personal profile.

5. METHODOLOGY

The investigators have adopted the survey method of research to study overall knowledge is and satisfaction with BCSBI's information among banking customers in Virudhunagar district. They used stratified random sampling technique for selecting the

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DECREASING NPA THROUGH DIGITILIZATION

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Abstract

In India, the banking sector is over-burdened with the highly increasing issues around Non-Performing Assets (NPAs). These rising bad loans seem to be swallowing away huge profit margins of financial institutions. A major reason behind pushing borrowers in the NPA category could be identified as the stressed macroeconomic conditions. The foremost action required from banks, considering this tedious situation, is to manage the present loan book effectively and be more cautious in lending new loans.

Keywords: Demonetization, Consumer Perception, Digital Payment, Digital Wallet.

Introduction

In India, the banking sector is over-burdened with the highly increasing issues around Non-Performing Assets (NPAs). These rising bad loans seem to be swallowing away huge profit margins of financial institutions. A major reason behind pushing borrowers in the NPA category could be identified as the stressed macroeconomic conditions. The foremost action required from banks, considering this tedious situation, is to manage the present loan book effectively and be more cautious in lending new loans.

Causes for NPA

According to a survey by global research firm, Ernst and Young among Indian bankers, 87% said that NPAs occurred due to diversion of funds to unrelated business or fraud, while a further 64% attributed them to lapses in due diligence. Around 72% of the survey respondents were of the view that the crisis is set to get worse.

Most of the bankers feel that the main problem is that banks can't monitor and check the finances of an enterprise thoroughly as they have no visibility into its operations. Although banks do ask for a number of documents to sanction a loan, they are found fumbling as far as real-time transactions of an enterprise are concerned, since they don't have access to its financial records or the feasibility of projections. The data that the banks have is not enough to authenticate claims, making them ill equipped to take decisions based on solid facts.

The 7 May 2015 RBI circular on "Framework for dealing with loan frauds" is supposed to bring banks in line with monetary discipline. According to the circular, banks now need to ensure strict monitoring of the finances of an enterprise both pre- and post-sanction. They will

Design of Gd_2O_3 nanorods: a challenging photocatalyst for the degradation of neurotoxicity chloramphenicol drug

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Volume 30, pages 3744–3752, (2019) Cite this article

S. Dhanalakshmi, P. Senthil Kumar, S. Karuthapandian, V. Muthuraj & N. Prithivikumaran

Abstract

In the present study, a gadolinium oxide (Gd_2O_3) nanorod was successfully synthesized by simple hydrothermal method for the photocatalytic degradation of chloramphenicol (CAP) drug under UV light illumination. Interestingly, the rod like morphology was observed from the TEM images with the particle size of 20 nm. The XRD results suggested that the high crystalline nature of the Gd_2O_3 nanorods with the crystalline size of 13 nm. The XPS results confirmed the formation of Gd_2O_3 nanorods and the oxidation states of different elements were addressed. The photocatalytic degradation of CAP was performed under ultra violet light illumination on Gd_2O_3 nanorods surfaces. The Gd_2O_3 nanorods were showed enhanced efficacy compared to the standard TiO_2 under UV light illumination. The photocatalytic degradation results revealed that the drug was degraded within a short span of time. 50 mg of Gd_2O_3 nanorods and 20 mg/mL of drug concentration were the optimized condition for the effective photocatalytic degradation. The reactive oxidative species actively involved in the photodegradation of CAP was OH and up to 5th recycle the Gd_2O_3 nanorods were possessed excellent stability.

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DIGITAL INDIA IMPLICATIONS IN EDUCATION SECTOR

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Abstract

India is already home to the 2nd largest number of Internet users globally with nearly 462 million users as of December 2017. There are more than a billion people who will need to be brought online for India to realise the vision of a digitally connected, knowledge economy. Government's Digital India programme will play a transformational role in achieving this. Digital India is an umbrella programme which covers many departments. It aims at ensuring the government services are made available to citizens electronically by reducing paperwork.

Keywords: Digital India, Education, Digital Programmes.

Introduction

Throughout the world, Information and Communication Technologies (ICT) continue to proliferate at incredible speed. Digitalization is one of the most fundamental period of transformation we have ever witnessed. Digital India was a flagship programme launched by the Prime Minister of India NarendraModi on 1 July 2015 - with an objective of connecting rural areas with high-speed internet networks and improving digital literacy. The vision of this programme is to transform India into a digitally empowered society and knowledge economy. It is one of the biggest step by our Government of India to motivate the citizen of the country and connect Indian economy to knowledge savvy world.

Vision of Digital India: Initiative of Dream Project

Digital Infrastructure as a Utility to Every Citizen:This initiative brings together to deliver high speed communication technologies and digital services that will reach to the remotest villages, round the clock. Public services like land records, certificates and many more will be made available online or public cloud.

Governance and Services on Demand:This vision will provide single window access to every individual. Every government services or information is available online and on mobile platforms with a single touch.

Digital Empowerment of Citizens:Under this vision, every citizen will empower through digital literacy and universal

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ECONOMIC SUSTAINABILITY IN PRODUCTION PROCESS BY MANUFACTURING INDUSTRIAL UNITS IN VIRUDHUNAGAR DISTRICT

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ABSTRACT: *Implementation of economic sustainability has become a critical issue for manufacturing sector in Virudhunagar district. In order to survive in today's competitive world implementation of economic sustainability has become a necessity. Implementation of economic sustainability in production process is brings lot of social and environmental benefits to the manufacturing industries. Such benefits include reduce the unwanted production and other costs, goodwill of the industry and improve business profile. The study brings forth that the implementation of more economic sustainability depending on the form of organization, amount of investment and category of industry shall enable their faster development in sustainable way.*

Keywords: Economic sustainability, implementation, manufacturing, industry, production process.

1. INTRODUCTION

Indian manufacturing sector have become the engine of economic growth in India with their effective, efficient, flexible and innovative entrepreneurial spirit. The micro, small and medium enterprises constitute a very important segment of the Indian economy. MSME's contribution to the development of our economy is significant as it evident in terms of MSMEs being the major constituent sector in the manufacturing system, employment generation and GDP. Sustainability reporting is the practice of measuring, disclosing and being accountable for organizational performance towards the goal of sustainable development and is considered synonymous with other terms used to describe for accounting for economic, environmental and social impacts such as triple bottom line or corporate responsibility. Smith and McDonald explain that: environmental sustainability requires that development is compatible with environmental friendly processes; ***economic sustainability means it is economically feasible*** and social sustainability means it is socially acceptable. This research paper discusses the review of related literature, methodology, objectives of the study and implementation of economic sustainability in production process by manufacturing industrial units in Virudhunagar district.

2. REVIEW OF RELATED LITERATURE

A. D. Basiago, in his study titled Economic, social, and environmental sustainability in development theory and urban planning practice, it concludes that while these examples from the developing world cannot be directly translated to cities in the

Full length article

Efficient photocatalytic degradation of ciprofloxacin and bisphenol A under visible light using Gd_2WO_6 loaded ZnO/bentonite nanocomposite

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Electrochemical cotinine sensing with a molecularly imprinted polymer on a graphene-platinum nanoparticle modified carbon electrode towards cigarette smoke exposure monitoring

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Expatiating biological excellence of aminoantipyrine derived novel metal complexes: Combined DNA interaction, antimicrobial, free radical scavenging studies and molecular docking simulations

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Exploring the DNA interactions, FGF growth receptor interaction and biological screening of metal(II) complexes of NNN donor ligand derived from 2-(aminomethyl)benzimidazole

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Fingerprint Recognition using fewer GLCM Features and Artificial Neural Network

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Abstract - This proposed work is recognizing fingerprint with minimum features by artificial neural network. Instead of considering all features generated from GLCM, only four features are used in the recognition process. The statistical co-occurrence features energy, entropy, correlation and cluster prominence are extracted from the GLCM matrix of single direction used for recognition. The Back propagation and Levenberg Marquardt algorithm are used for training the neural network. The experimental results show that the good recognition rate is obtained in this proposed work.

Keywords: Fingerprint Recognition, GLCM, Haralick Features, Artificial Neural Network.

1. INTRODUCTION

Fingerprint recognition is the oldest and most acceptable method of Biometric Systems. The useful properties lead to use fingerprint for authentication are its uniqueness and stability over a lifetime of a human being [1]. The uniqueness of fingerprints is determined by local and global features. The local features are represented as ridge bifurcations and ridge endings. The global features are represented as ridges and valleys. These features are known as minutiae [2, 3]. Fingerprint features are classified into three levels. Level_1 is Patterns, Level_2 is Minutiae and Level_3 is Pores and Ridges. These features are used for recognizing fingerprints [3]. The fingerprints patterns are divided into three parts. Loop such as right loop and left loop covers 65% of fingerprints, Arch such as plain and tented arch covers 1% of fingerprints and whorl covers 30% of fingerprints and accidental whorl covers 1% of fingerprints [3, 4]. The local ridge characteristics of a fingerprint image are known as minutiae. More types of minutiae features are characterized by the spatial location. The two main minutiae types are bifurcations and ridge endings (also known as termination) [5]. The other minutiae types are shown in figure 1.

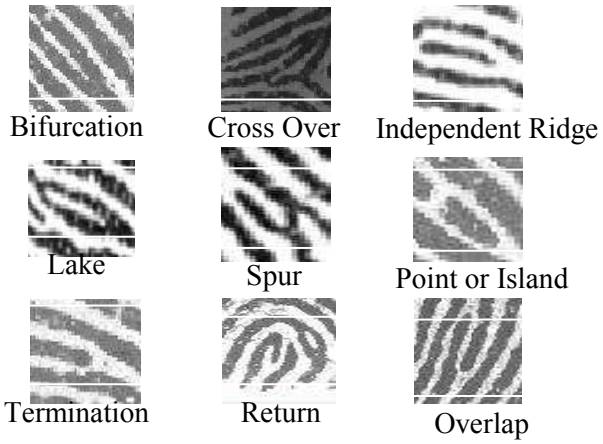

Figure 1: Types of Minutiae

The Level-3 features consist of geometrical details of ridges and pore location and details of small characteristics from a fingerprint image. The fingerprint recognition is the process of identifying an individual person based on minutiae points [6] or features. The texture analysis methods are divided into four categories namely Model based, Statistical based, Structural based and Transform based [7, 8]. The method covered in this paper is statistical based method. The statistical feature extraction is classified into three categories such as: First-order, Second-order and Higher-order statistics [7]. In the fist-order statistics features are extracted from a single pixel. The higher-order statistics features are extracted from two or more pixels. The second-order based statistical method extract the features by pair of pixels [8]. The most popular second-order statistics feature extraction method is Gray Level Co-Occurrence Matrix (GLCM). The GLCM is also known as Gray Level Spatial Dependence Matrix. It displays the brightness occurs in an image. It defines the relationships between the neighboring pixels [9].

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Fruitful fabrication of CDs on GO/g-C_3N_4 sheets layers: A carbon amalgamation for the remediation of carcinogenic pollutants

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HEGEMONIC MASCULINITY IN SHOBHAA DE'S *SECOND THOUGHTS*

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Abstract

The concept of hegemonic masculinity has been used in gender studies to explain the men's power over women. Hegemonic masculinity in the empirical case demonstrates the hegemonic masculinity shifts and adopts the new practices to enable men to retain power over others. Shobhaa De depicts the new urban woman in a patriarchal hegemony in her novels. She also projects hegemonic masculinity in her novel *Second Thoughts*. She also projects the extra-marital affairs of women to break the traditional and moral values of society. *Second Thoughts* is the story of an Indian girl, Maya who is victimized as a silent sufferer in the clutches of matrimonial bond.

Keywords: *Hegemonic masculinity, marriage, patriarchy, the quest for identity*

Shobhaa De is assailed by most of the critics as an ultra-modern Indian woman writer in the literary world. She discusses the very sensitive strand of human life in her novels. People judge that women are inferior to men because of their different sex. The people of the Orthodox family in India used to criticize her for her open discussion on sexual matters. Gender activists seek to change the relationship of men with women which is based on the concept of hegemonic masculinity. Hegemonic masculinity was introduced as a concept of understanding gender as a dynamic relational power, between the diligence of male power and the potential to change the social structure. It poses the global dictionary of power and manipulation by focusing on certain passages or clauses and metaphorical references present in the novel which reflects the culture, norms and social beliefs of the Indian community. It takes a deep insight into Indian cultural diversity, unequal distribution of power like gender discrimination, racism, and marginalization. Shobhaa De has become the symbol of highlighting different perspectives of woman's freedom

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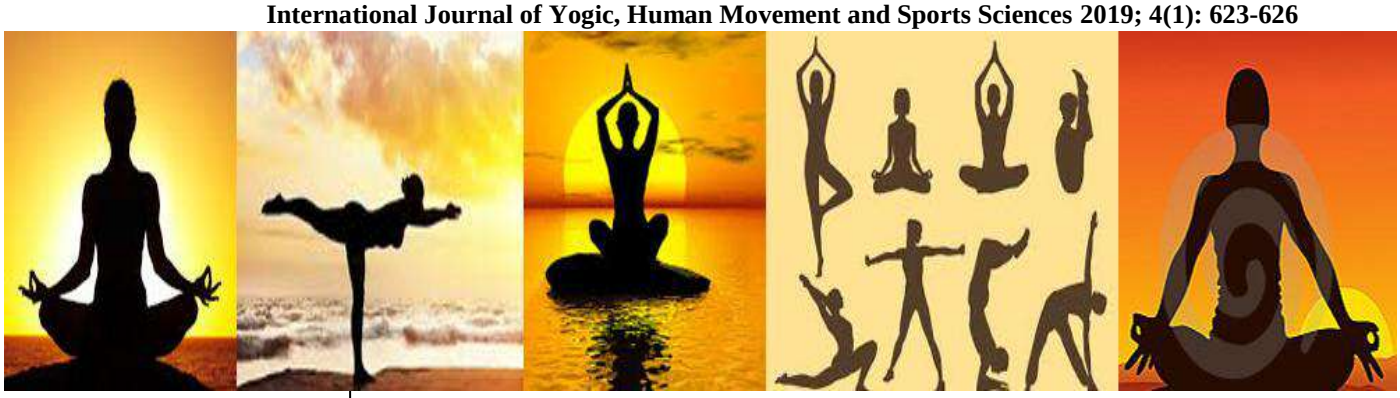

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Impact of pranayama practices on maximum oxygen consumption among working men and women of different age groups

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Abstract
The aim of the study was to analyze the changes on maximum oxygen consumption in response to pranayama practices among working men and women of different age groups. To achieve the aim of this study eighty middle aged people were selected in Virudhunagar District schools, in which 40 subjects were men and remaining 40 subjects were women. They were further categorized into four sub-groups of 20 subjects each. The first one is 40-44 age groups of men and women separately and another one 45-49 age groups of men and women separately. The maximum oxygen consumption was selected as dependent variable for the study. During the training period, the experimental groups underwent pranayama practices six days a week for twelve weeks. Three-way analysis of variance was used to find out the influence of each factor independently and also their combined influence on each of the selected variables. The level of confidence was fixed at 0.05 for significance. The result of the study shows that due to the effect of pranayama practices the maximum oxygen consumption of 40-44 and 45-49 age category men and women were significantly decreased. It also gives the existence of insignificant difference on maximum oxygen consumption among gender in relevance to different age categories during pre and post tests.

Keywords: Pranayama practices, Maximum oxygen consumption

Introduction
An appropriate yoga practice first begins by giving attention to breathing. A person can live without food for about 30 days and without water for about three to six days. But a person can survive without the breath for only five to seven minutes before death. Obviously, breathing is imperative to the sustenance of life. But the breath also has a profound effect upon the nervous system. The yogis have known for thousands of years that there is an intimate connection between the body, the mind and the breath; and that emotions are directly affected by breathing. Accordingly, the yogis developed intricate methods of controlling the breath as a method of controlling the mind and body; metabolism, and emotions.

All our physiological processes are controlled by the nervous system. One branch of the nervous system, called the sympathetic nervous system (SNS), is affected by how we breathe. Rapid and shallow breathing depletes carbon dioxide, which causes the sympathetic nervous system to become activated. This results in increased heart rate and blood pressure, which leads to sweaty palms and feet, high levels of anxiety (the flight or fight syndrome), and more. Yoga breathing is an effective method that helps restore and maintain normal carbon dioxide levels. Yoga exercises become more comfortable and powerful when inhalation and exhalation flow freely. The subtle flowing of air into and out of the nose stimulates a relaxation response, which directly affects the brain and nervous system. Breathing through the nose also warms and filters the air further reducing its impact upon the nervous system. Normal breathing oxygenates our blood and removes the noxious byproducts of metabolism and respiration. Controlled yoga breathing (pranayama) when appropriately practiced accelerates this process. The exercises of pranayama the correct breathing technique helps to manipulate our energies. Most of us breathe incorrectly, using only half of our lung capacity. Pranayarna is a technique, which re-educates our breathing process, helps us to release tensions and develop a relaxed state of mind. It also balances our nervous system and encourages creative thinking.

Influence of mono energetic gamma radiation on structural and electrical properties of TiO_2 thin film coated on p-type porous silicon

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P. Pandaram, B. Lawrence, N. Prithivikumaran & N. Jeyakumaran

Abstract

Titanium dioxide thin film was coated on p-type porous silicon by sol–gel spin coating method. The prepared samples were irradiated by the mono-energetic gamma radiation at Auto-irradiation facility with the Cesium-137 for the Gamma dose range from 100 to 1000 mSv. Gamma irradiated samples revealed that the physical changes of titanium oxide/porous silicon layer found to be varying with increasing gamma dose. The irradiated titanium oxide/porous silicon layer were investigated by scanning electron microscopy, X-ray diffraction, Fourier transform infra-red, Photoluminescence and I–V characteristics studies. The surface morphology of the irradiated titanium oxide/porous silicon layer has shown deformation with increasing gamma dose. The X-ray diffraction patterns of titanium oxide/porous silicon layer after irradiation revealed changes in crystallite size, dislocation density, strain and phase content. These changes in anatase (004) are linear with gamma dose than the rutile (310) of TiO_2-PSi. Fourier transform infra-red spectrums of the irradiated samples showed an increase in intensity of vibration modes with the increase of the radiation dose. Photoluminescence peaks are found to be in the range of 330 to 360 nm for all the irradiated samples and the intensity of Photoluminescence peak increased for the irradiated samples with increasing gamma dose. I–V Characteristics revealed that the electrical conductivity of irradiated samples increased linearly with gamma dose. The linear changes in electrical property of titanium oxide/porous silicon under the influence of mono-energetic gamma photons gives a positive indication that it can be further studied for the development of radiation sensor for applications in nuclear field.

Information Access Behavior of Social Science Researchers in Affiliated colleges in Virudhunagar district

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Abstract - This paper attempts to study the information use pattern of social science researchers in affiliated colleges in Virudhunagar District. Information has the power only when it is transferred and communicated. The Research emphasizes on how this power is utilized by the user like research scholars, research guide, Librarian and to show on thru sample data collection, how the Library system should be modified, How the Digital system should be adopted in Library system for keeping power of Information.

Keywords: Information sources, User behaviour, Information structure

1. INTRODUCTION

Information is described as the fifth need of man ranking after air, water, food and shelter. In one form or another, it remains a significant element in the development of human society and it has shaped over a long period of time into the way in which we think and act. The information 'explodes' into power only when it is transferred and communicated, in other words, information is activated by communication. More research into behavior and information gathering patterns of the user groups, will assist the library more effectively in developing programmers and using the resources and limited funds to achieve desired goals. Accurate and up-to-date knowledge about users and their information behavior emerges now as one of the essential ingredients for any library system design. The effectiveness of library and information system depends on the extent to which the system characteristics correspond with the user and on how much the potential user is willing and able to make use of it. The Librarian has to intimately and individually understand the requirements of his users and continuously update his knowledge about users through systematic studies and observations.

Information use pattern studies are one of the important areas in user studies. The motives and purposes of users give a new insight into information needs and requirements. To satisfy such needs and requirements, users adopt various means for accession to sources of information, and in the act of accession to information, the user relies or calls upon the sources predetermined which lead to satisfaction or dissatisfaction.

Statement of the Problem

This study examines information seeking behaviour of social science researchers in affiliated Colleges in Virudhunagar District. The information needs can be assessed on the basis of duration and quantum of time utilization in search of information in libraries of their own institutions and also in other institutions; and so the time aspect had been brought within the purview of the present study.

2. REVIEW OF LITERATURE

Chern Li Liew and Siong Ngor Ng (2006)[1] this study investigates the information seeking behavior of fourteen ethnomusicologists in New Zealand via interviews. The findings shed light on what information ethnomusicologists seek, the sources and services they use, and the barriers they face in information seeking and use. A number of ways in which libraries can create collections and design services that will meet the information needs of ethnomusicologists are proposed.

Angela Weiler (2005)[2] Research in information-seeking behavior, motivation, critical thinking, and learning theory was explored and compared in a search for possible motivating factors behind students' dependence on television and the Internet for their

Integrating a Cultural Intelligence in Mulicultural Workforce in Chennai City

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Abstract - Today's environment that is more complex, dynamic and competitive than ever before has thrown up a new term called CQ (Cultural Intelligence). The importance of CQ asking businesses to function efficiently in different cultural contexts has never been more important. The purpose of this research study is to examine the integrating a cultural intelligence in multicultural workforce in Chennai city. The Rotated Factor Matrix for the variables relating to the Integrating a Cultural Intelligence in Multicultural workforce among the overall sample member is given in Table. The study concludes that majority of the factors having positive loadings, which implies that majority of the respondents agree there is an importance of integrating a Cultural Intelligence multicultural workforce.

Keywords: Cultural Intelligence, Workforce, Multiculture.

1. INTRODUCTION

We are all familiar with IQ and EQ. Today's environment that is more complex, dynamic and competitive than ever before has thrown up a new term called CQ (Cultural Intelligence). The importance of CQ asking businesses to function efficiently in different cultural contexts has never been more important.

Employees who have a very high level of CQ are able to bridge the divides and knowledge gaps in an organization, educate their colleagues about different cultures, help to build interpersonal connections in a multicultural office environment, enhance innovation and creativity and assist the organization makes the best use of multiple perspectives in a multicultural workforce.

It is not just enough to be intelligent, emotionally mature or have good social skills. CQ is a combination of cultural knowledge, cross-cultural skills, and cultural metacognition and these skills do not operate in isolation from each other.

The internet has made it possible to communicate at one click of a button. Emails and video conferencing have allowed information to be transferred regardless of the time and location. It is now possible talk to someone living in another country from the comfort of one's home or office. Many companies are also accepting foreign talents to grow their business.

Working in a culturally diverse environment, however, makes it easy to forget that the people one is dealing with have perceptions and perspectives different from one. Developing a sense of cultural intelligence is important to learn how to deal positively with people from different cultures. Enhancing cultural intelligence is possible and doing so will allow one to become more compassionate and sensitive to other people.

Cultural intelligence also plays a huge role in determining cooperation among people from various corporate cultures, traditions, nationalities, disciplines, functions and cultures. Bridging cultural differences can make or break one's business. Developing and enhancing cultural intelligence may not be an easy feat. It is a process where people slowly gain a new perspective and insight to new professional methods and language that will let them develop better solutions when it comes to cross cultural situations.

How to Enhance the Level of Cultural Intelligence in One's Workplace

Cultural intelligence is an important aspect in one's professional and everyday life. Building compassion between colleagues and clients of different cultural backgrounds and nationalities can be done by developing personal attributes that boost one's quality of life, personal and corporate reputation and customers' experience. There are various ways

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ABSTRACT

For several years, the Indian Railway (IR) keeps its passenger fare low and cross subsidises the loss making passenger traffic with profit earning freight traffic. Under the modern consumerism, passengers of rail transport are craving for quality service from the IR. The Railway Board has to ponder over the features of service quality of IR where for mass movement of men and materials, rail transport is highly suitable; but this must be accompanied by quality train service with safety and convenience in travel. Considering the above aspects, the present study titled "measuring service quality in Madurai division of Southern Railway Zone" has assumed greater significance than ever before.

KEYWORDS: ***Indian railway, Southern Railway, service Quality, passenger expectation, Madurai division.***

INTRODUCTION

[1]In a year, 700 crore passengers travel in Indian railway; while 1.3 crore passengers travel in IR daily, 1.2 crore of them travel in the unreserved Coaches. Southern railway (SR) a key zone of Indian railway was formed in April, 1951. Head quartered in Chennai, it has the following six railway divisions – Chennai Tiruchirapalli, Madurai, Palghat, Salem and Trivandrum. [2]Madurai railway division was formed in 1856; it spans over 1,356 kms making it the largest division of SR. At present, the Madurai division covers 11 districts of Tamilnadu and one in Kerala. [3]SR operates daily 1313 trains where more than 50 core passengers travel in a year.

LITERATURE REVIEW

A review of earlier studies reveals that previous studies focused on measuring service quality of Indian Railways in terms of Parasuraman's SERVQUAL model based on five dimensions [4]Hemant Sharma and Sonali Yadav (2013), Rajeswari and Santa kumari (2014) and Singh and Vikas Kumar(2015); and [5]certain others were concerned about growth and development of IR – Arpita Mukherjee and Ruchika Sachdeva(2004). The present researcher's review of literature has brought to limelight that earlier studies were not concentrated on passengers' problems in online ticket booking, issue of women passengers' safety in travel, benefit of holding season ticket and the like. Importantly, feasible solutions are lacking in raising the revenue of IR/SR so that it could improve the service quality of IR/SR. The present study fills this gap.

RESEARCH PROBLEM

Concerning the service quality, IR is severely hampered by the funds crunch. To illustrate, as stated earlier, a large part of revenue of IR is obtained from freight traffic, and passenger fare is cross subsidized with profit earning freight traffic. To worsen the situation the IR is losing freight traffic to road transportation.

A sordid state of affairs is the operating ratio of IR has consistently been higher than 90%; [6]while it was 91.3% in 2014-15, it was 90.5% in 2015-16, 96.5% in 2016-17, 96% in 2017-18 and 92.08% in 2018-19.

The foregoing discussion pinpoints lack of funds of IR/SR. The Ministry of Indian Railway has to balance carefully both these aspects, namely augmenting its financial resources and enhancing the service quality in rail transport. Amid this back ground, the following research questions arise.

1. What are the passengers' perceived and expected level of service quality features in Madurai division of Southern railway?

MGNREGS A Facilitator for Rural Development in Tamilnadu

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Abstract – The intention of the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) is to provide a basic employment guarantee in rural areas. Poverty alleviation programmes comprising of wage employment programmes, rural housing schemes and a public distribution system have been initiated from time to time. The earlier wage employment programmes did not attain the goals and aims. The objectives of the study were to analyses the financial pattern of MGNREGS, employment generation, asset creation, achieving women empowerment under MGNRES. MGNREGS has transformed our rural India by eradicating poverty enabling the safety net for the unemployed especially during famine and drought leading to sustainable development. Here the researcher has study the overview of MGNREGS in Tamilnadu.

Keywords: MGNREGS; Rural Development; Tamilnadu

1. INTRODUCTION

In India, 72 percent of population lives in rural and remote villages. India's economy mainly depends upon rural development and growth. Rural growth tends to agricultural development and the improvement of rural infrastructure. After Independence, our country faced a lot of economic problems as well as social problems such as population growth, poverty, unemployment, lack of industrial development, inadequate infrastructure, ignorance, low level of savings and investment. In these circumstances, there is a need to re-construct and trigger rural growth in order to relieve from the socio-economic problems. Poverty alleviation programmes comprising of wage employment programmes, rural housing schemes and a public distribution system have been initiated from time to time. The earlier wage employment programmes did not attain the goals and aims. In this situation, the Government of India implemented MGNREGS on 2nd February, 2006 with the objective of "enhancing livelihood security in rural areas by providing at least hundred days of guaranteed wage employment in a financial year, to every household whose adult members volunteer to do unskilled manual work".

MGNREGS plays a vital role as a social change instrument which facilitates changes in the village. This scheme has the potential to transform the lives of millions of rural poor by guaranteeing wage employment through the creation of productive assets. The MGNREGS has reduced distress migration from poor regions, provided secured incomes for women, supported agricultural wages and increased incomes for wage workers who are arguably amongst the poorest in the country. The primary objective of the Act is augmenting wage employment and its auxiliary objective is strengthening natural resource management through works that address causes of chronic poverty like drought, deforestation and soil erosion and so encourage sustainable development. There are three overarching goals in MGNREGS: i) employment creation; ii) regeneration of the natural resource base and creation of productive assets in rural areas; and iii) strengthened grassroots processes of democracy through transparent and accountable governance. Another important aspect of MGNREGS is the increasing participation of women in it. It not only provides employment to them but by giving wage rate equal to that of a man, it has empowered the women economically as well as socially. It aims at creating sustainable rural livelihood through regeneration of the natural resource–base, i.e. augmenting productivity and supporting creation of durable assets and strengthening rural governance through decentralization and processes of transparency and accountability. In addition to this, the aim of MGNREGS is to create durable assets that would augment the basic resources available to the poor.

The intention of the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) is to provide a basic employment

Molecular docking studies of mixed ligand complexes using flavonoids as precursors

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Abstract - Flavonoids are a group of plant phenolics which provide various health benefits through cell signaling pathways and antioxidant effects. In the present study, a new series of transition mixed ligand complexes of Co(II), Ni(II), Cu(II) and Zn(II) were synthesized by incorporating curcumin and quercetin flavonoid precursors. The structural features of the synthesized complexes had been explored by UV-Vis, NMR and conductivity measurements. These data support an octahedral geometry of the synthesized complexes. *In silico* biological activity score for the ligand was predicted using PASS online software. Based on the *in silico* results molecular docking studies was carried out to find out the interaction between the targets like cancer DNA (1 BNA), 6-COX enzyme and the synthesized compounds using HEX 8.0

Keywords: Flavanoids; curcumin Schiff base; VLS3D; Molecular Docking

1. INTRODUCTION

Curcumin (1,7-bis(4-hydroxy-3-methoxyphenyl)-1,6-heptadiene-3,5-dione) is a yellow component of the Indian spice turmeric, manufactured from the rhizome of the perennial herb *Curcuma longa* [1]. Curcumin has been referred to as "curecumin"[2,3] because it possesses various biological activities like antitumoral, antimicrobial, anti-inflammatory, antioxidant, anticancer, antihepatotoxic, antihyperlipidemic, antiviral and anti-Alzheimer's disease.

Quercetin is an yellow pigment in plant products which can help to alleviate eczema, sinusitis, asthma and hay fever [4,5]. The literature survey over the past few decades on curcumin reveals that its biological activity is enhanced after forming Schiff base with heterocyclic ring containing compounds like 4-aminoantipyrine. Recent progress explores that the individual biological activity of both the flavonoids is enhanced after forming complexes with metal ions [6, 7]. Increasingly over the last decade, computational (*in silico*) methods have been developed and applied to pharmacology hypothesis development and testing of lead compounds. These *in silico* methods incorporate databases, quantitative structure-activity relationships, pharmacophores, homology models and other molecular modeling approaches, machine learning, data mining, network analysis tools and data analysis tools that use a computer. *In silico* methods are primarily used along with the *in vitro* data create the model as well as to test it. Such models have seen frequently use in the discovery and optimization of novel molecules with affinity towards the target, the clarification of absorption, distribution, metabolism, excretion and toxicity properties as well as physicochemical characterization

Based on the literature survey and the above facts, in the present study, a few mixed ligand complexes using the above biologically active flavanoids (curcumin and quercetin) were synthesized. They have been characterized by UV-Vis, NMR and TGA analytical techniques. The biological activity of the curcumin Schiff base has been predicted by PASS online. As per the results obtained from the above software, Molecular docking studies was carried out in HEX 8.0 and Argus lab software.

2. EXPERIMENTAL

2.1 Synthesis of compounds

2.1.1 Synthesis of Curcumin derived Schiff base (L_1)

Curcumin derived Schiff base was prepared by condensing equimolar concentration of curcumin with 4-aminoantipyrine in 30 mL of ethanol. This mixture was refluxed for *ca* 3 h. Then the volume of reaction mixture was reduced and washed with petroleum-ether for 3 times to remove the reactants. Finally it was poured into water. The red orange precipitate was obtained.

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NEIGHBOURHOOD CONTRACTION OF SOME IRREGULAR GRAPHS

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Keywords: Neighbourhood contraction, irregular graphs, neighbourly irregular graphs. AMS Subject Classification Code(2010): 05 C (Primary)

ABSTRACT

A connected graph G(V,E) is said to be a neighbourly irregular graph, if no two adjacent vertices of G have the same degree. G is said to be a highly irregular graph if for every vertex of G no two neighbours are of same degree. G is said to be neighbourhood highly irregular, for any vertex v, if any two distinct vertices in the open neighbourhood of v, have distinct closed neighbourhood sets. The neighbourhood contracted graph Gv of G, with respect to the vertex v in G is the graph with the vertex set V-N(v), where two vertices u, w are adjacent in Gv, if either w = v and u is adjacent to any vertex of N(v) in G or u, w □ N[v] and u, w are adjacent in G. In this paper, we discuss the conditions needed for both G and Gv to be irregular graphs of same kind.

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ABSTRACT

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Performance of Cluster Analysis for Consumer Segmentation: A Study with reference to Virudhunagar Junction of Southern Railway

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Abstract - Indian Railways (IR) is a mammoth Public enterprise. It is ideal for long distance travel and movement of bulk commodities. It brings together the diverse geographies and stands as a vivid model of national integration of the country. As the rail passengers are diverse in nature, they are expecting a host of service quality attributes of IR or Southern railway (SR). So, the IR/SR bears an onerous task of providing different categories of service quality attributes to the passengers and for which, the IR should be a profitable enterprise. The present study by applying cluster analysis strives to explore how many groups are there in the rail passengers in Virudhunagar Junction of Madurai division in Southern railway of IR.

Keywords: Madurai division Southern Railway, Indian Railway, Cluster analysis, Service quality.

1. INTRODUCTION

As compared to road transport, the IR has a number of intrinsic advantages. Therefore, the IR has a pride of place in the economic development of India. After globalization, rail transport faced intense competition from other modes of surface transport like passenger vans. So, in surface transport, the IR has to ponder over upgrading service, quality. Now, to remain competitive in the field, IR/SR has to concern about improving the service quality.

Service quality is a comparison of expectations with performance. From the viewpoint of business, service quality is an achievement in customer service. Customers form service expectations from past, recent experiences and advertisement. For instance in the case of rail journey, passengers compare perceived service with expected service in which if the former falls short of the latter, the passengers are disappointed; of course, the modern consumers expect a band of service quality attributes from the railways such as basic amenities, modern amenities (tech drivers) ticket looking facilities and service operational activities like safe travel, speed of trains, punctuality of trains, and frequency of service. The measurement of these attributes of service quality depends on passengers' expectation in terms of the attributes of the rail service, they may receive and the Southern Railways' ability to offer this expected service. The present paper attempts to segments the passengers of Madurai division in Southern Railway with reference to Virudhunagar junction by performing cluster analysis.

2. LITERATURE REVIEW

Sheeba and Kumuthadevi (2013) [1] in their study applied factor analysis for exploring the factors that result in passenger satisfaction in train journey. They found the important factors that determined the passengers' satisfaction in the order of basic amenities, Cleanliness, safety, punctuality, health care service and railway staff behaviors.

Neelamegam and Murugan (2015) [2] in their study found that passengers in their ranking of service quality attributes of Southern railway accorded first rank to affordable train fare and last rank to catering service of the SR.

Neelamegam and Murugan (2016) [3] in their study examined passengers' kind of problem in online ticket booking. Found that the need for debit card and internet banking was most important problem in online booking.

Neelamegam (2018) [4] in his study evolved a 29 item multiple attribute scale compressed into four dimensions as the base to measure service quality in Madurai division of Southern Railway. His significance testing revealed there were difference between expectation and perception of passengers in terms of all the four dimensions(basic

Article

Personality Psychology in Margaret Atwood's Short Story Under Glass

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DOI:10.24113/ijellh.v7i2.6950

Authors:

Dr. Y. Vidya

Abstract

Margaret Atwood is one of the most important and influential writers alive today. Margaret Atwood's literature, both in the form of poetry and prose, is significant to an understanding of 'female experiences' more broadly speaking, though, Atwood attempts to explore questions of identity. She thus attempts to achieve the creation of a space and time in which readers can think critically about the world and their place in it. This self-reflexive form of analysis is significant in a modern and post-colonial world in which issues of gender have become increasingly critical, as it allows readers both a way of imagining and a way of criticizing ourselves and our own culture and that of others we perceive around us. Her stories are acute depictions of men and women, and are therefore interested in human curiosity but also in control and power. Atwood focus lies also in the effects and dynamics of unequal power relations.

Preparation and Studies of Thin Films of Cu-doped $GdSr_2RuCu_2O_8$

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M. Subramani, T. Geetha Kumary, N. Radhikesh Raveendran, R. Rajaraman, R. Pandian, R. M. Sarguna, N. Jeyakumaran & Awadhesh Mani

Abstract

Preparation of superconducting thin films of the Cu-doped Ruthenocuprate superconductor $GdSr_2Ru_{0.9}Cu_{2.1}O_8$ has been attempted by pulsed laser deposition method. Thin films were deposited on different substrates employing different laser ablation parameters with the idea of obtaining good-quality films which exhibit superconductivity. The crystal structure and morphology of the thin films were characterized by X-ray diffraction and scanning electron microscopy measurements and optical characteristics by Raman scattering measurements. High-temperature ex situ oxygen annealing led to the formation of homogeneous films with the occurrence of an onset of superconductivity, traced by electrical resistivity measurements. Increasing the annealing time has led to a systematic improvement in the sample quality and the physical properties. However, prolonged high-temperature annealing seems to cause deterioration in properties as seen from electrical resistivity and Raman scattering measurements. The studies reveal the importance of an optimal high-temperature oxygen annealing procedure to induce superconductivity in thin films of this Ruthenocuprate system.

Racism in Nadine Gordimer's *Burger's Daughter*

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Abstract - Racism is a word of many definitions. From the beginning of South Africa, there were conflicts with the country, slavery of blacks, and going against the people. Racism was a fluctuated conflict in the nineteenth century and still exists today even though there are laws against it. The intellectuals and writers in this country could not keep silent against these racist practice and they discussed them in their works. One of these is Nadine Gordimer, the noble-winning writer in literature. She was a white activist who has been an eye witness of racist era. In this paper about racism in her novel *Burger's Daughter.*

Keywords: Racism, Apartheid, Racial Discrimination, Nadine Gordimer

1. INTRODUCTION

Burger's Daughter is about anti-apartheid in South Africa. They search to overthrow the South African government. Gordimer novels about South Africa struggle politics, and she knew many of the activist. *Burger's Daughter* was judged to be indecent and capable of endangering the state of the Republican of South Africa, on the grounds that its story depicted white characters considered as bad and black characters considered as good. In addition, Gordimer was accused of having written a clearly political novel whose theme of fostering black militancy posed a threat to the peaceful co-existence between the separated races of the country.

2. RACIAL DISCRIMINATION

Racial discrimination is the act of treating someone differently than others because of the color of his or her skin. This generally happens because of a social construct, or the attachment to certain meanings to a person's race, used to justify the discrimination. Race is the primary determinant of human traits and capacities and that racial differences produce an inherent superiority of a particular race. Racial discrimination occurs when an individual is subjected to unequal treatment because of their actual or perceived race.

- People call them by various names instead of their actual name in order to insult them.
- Black people are made to sit differently away from others
- They are terminated or demoted from their job and not given any good reason to justify the decision.
- People around them humiliate their family and their nature of origin.

3. APARTHEID IN BURGER'S DAUGHTER

The system of Apartheid was dismantled and Nelson Mandela ascended from his tiny jail cell to become the leader of an integrated South Africa. Nadine Gordimer_was got the Nobel Prize for Literature with Burger's Daughter specifically for her ability to fuse art and morality. The Guardian included the novel among the top 10 books ever produced in South Africa. Once against book banning was proven to be the most effective way to accomplish exactly the opposite of the intent of the ban and once again the lesson failed to be learned by those who would follow suit in the future.

Burger's Daughter is about a group of white anti-apartheid activists in South Africa seeking to overthrow the South African government. It is set in the mid-1917's, and follows the life of Rosa, the title character, as she comes to terms with her father Lionel Burger's legacy as an activist in the South Africa Communist party.

Burger's Daughter offers a fascinating take on the apartheid era, but the novel's interest goes far beyond its foregrounding historical merit. It also raises issues of universal concerns, issues of mind over matter, action over inertia, life over death. Rosa's personal struggle to come to terms with her father's legacy is one of them.

Following in the footsteps of a god-like father is a universal challenge for any dutiful child to perceiving the ultimate meaning of the actions of one's parents, the pertinence of their ideology and their real power to change fate and destiny. In our house, Rosa says, it was believed that changing the world, eliminating private conflicts set up by the competitive nature of capitalist society would give meanings to people's lives. But these political and humanitarian preoccupations neither acknowledged nor explained the mystery of life and death beyond the revolution

Many of Gordimer's works have explored the impact of apartheid on individuals in South Africa. Journalist and novelist George Packer writes that, as in several of her novels, a theme in *Burger's Daughter* is of racially divided societies in which well-meaning whites unexpectedly encounter a side of black life they did not know about. Literary critic Carolyn Turgeon says that while Lionel was able to work with black activists in the ANC, Rosa discovers that with the rise of the Black Consciousness Movement, many young blacks tend to view white liberals as irrelevant in their struggle for liberation. Rosa witnesses this first hand listening to the black university student in Soweto and, later, in London, her childhood friend "Baasie" , who both dismiss her father as unimportant.

Author and academic Louise Yelin says that Gordimer's novels often feature white South Africans opposed to apartheid and racism who try to find their place in a multiracial society.

4. CONCLUSION

Nadine Gordimer's *Burger's Daughter is about* apartheid in South Africa.She became anti-apartheid novelist, her close observation made her to do this. Her novels are the representation of people who either are in distress for being separated from the racism of the society like whites or suffer from imposed deprivation like the blacks. She is the writer of commitment and in her novels, she testifies to the predicaments of her society marked by political issues during apartheid. Gordimer's literary output serves through which she expresses her protest against oppression and rights for people equality and liberation. She is also an observant witness. Her writings reflect the depths of her people's consciousness and lay bare their psycho-political development. In her authentic portraits of South Africa, Gordimer calls for a radical change, a transformation inevitable for the betterment of her fragmented society.

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Recognition of Bangla Script Characters – A Comparative Study

M. Karthigaiselvi and T. Kathirvalavakumar

Abstract

In the present article, a study on recognition of printed and handwritten Bangla characters is presented. This paper discuss on various Recognition techniques based on different feature extraction approaches. Also it evaluates the performance of those approaches by comparing different techniques and also analyzes the various methodologies and their reported results on real datasets.

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Social Media and its Impact on Arts and Science College Students in Virudhunagar District

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Abstract – Social media is a platform for people to discuss their issues and opinions. Before knowing the aspects of social media people must have to know what is social media? Social media are computer tools that allow people to share or exchange information's, ideas, images, videos and even more with each other through a particular network. The study was conducted to examine the impact of students' use of social media networks. The study revealed that majority of the respondents had mobile phones with internet facility and had knowledge of the social media networks. As a result they visit their social media networks and spend between one to two hours every day. In addition, the study revealed that the use of social media had affected academic performance of the respondents negatively and further confirmed that there was a strong positive relationship between the use of social media and academic performance.

Keywords: Social media, Impact, Arts and science college students.

1. INTRODUCTION

Now a day's social media has been the important part of one's life from shopping to electronic mails, education and business tool. Social media plays a vital role in transforming people's life style. Social media includes social networking sites and blogs where people can easily connect with each other. Since the emergence of these social networking sites like Twitter and facebook as key tools for news, journalists and their organizations have performed a high-wire act. These network sites have become a day to day routine for the people. Social media has been mainly defined to refer to "the many relatively inexpensive and widely accessible electronic tools that facilitate anyone to publish and access information, collaborate on a common effort, or build relationship".

2. REVIEW OF RELATED LITERATURE

Jocabsen and Forste, found a negative relationship between the use of various media, including mobile phones, and self-reported GPA among first year university students in the United States. In Taiwan, Yen at el., identified an association between mobile phone use and respondents and report that respondents have allowed phone use to interfere with their academic activities. Similarly, Hong et al., reported that daily use of mobile phones is correlated with self-reported measure of academic difficulty among a sample of Taiwanese university students. In a survey of Spanish high school students Sanchez-Martinz and Otero, found a correlation between "intensive" mobile phone use and school failure. Ahmed Qazi, Hanqittai Hsich, Pasek and Hanqittai, conducted on the same topic revealed no correlation between social media and students' academic performance. A study conducted at Whittemore school of Business and Economic on one thousand, one hundred and twenty seven students revealed that there is no correlation between how much time is spent on social networking sites.

3. METHODOLOGY

The present paper is based on both the secondary and primary data collected relating to the social media and its impact on arts and science college students. The secondary data collected provides background and supportive information relating to the study. Primary data are also collected through a statistical survey with various arts and science colleges in Virudhunagar district. A formal enquiry was made by using interview schedule designed for the purpose, from 250 arts and science college students selected conveniently.

4. ANALYSIS AND DISCUSSION

The respondents were asked whether they have mobile phone, out of the total respondents of 250, all the college students have a own mobile phones. A follow up question as to whether the respondents had internet facility on their phones showed that a

Vacuum
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Sol-gel assisted spin coated CdS/PS electrode based glucose biosensor

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Structural and Optical properties of ZnO/PS nano composite before and after vacuum annealing treatment

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Abstract : The nanocrystalline ZnO thin film was coated on porous silicon substrate by sol-gel spin coating method. Porous silicon (PS) substrates were prepared by electrochemical anodization on p-type silicon wafers of (100) orientation for various current densities. Surface modification of PS by ZnO and its structural and optical properties before and after vacuum annealing treatment were studied. It is observed that (002) oriented ZnO thin film was formed on PS substrate. It is found that the size of ZnO grains is 49 nm and after vacuum annealing treatment the grain size of ZnO on PS increases from 49 to 61 nm. SEM images show that the pore filling of ZnO on PS. The 493 nm^{-1} stretching mode vibration of ZnO was observed for ZnO/PS nanocomposite. The PL peak intensity increases due to vacuum annealing treatment.
Key words: Porous silicon, ZnO/PS, XRD, SEM, PL, vacuum annealing.

Introduction

In recent years, Silicon based nanocomposites have emerged as a very strong field of research due to their potential applications. The combination of ZnO film and porous silicon substrate would pavethe way for integration of ZnO with Si based optoelectronic devices. Porous silicon (PS) is one of the most important Si-based luminescence materials in the field of research. The quantum-sponge model for porous silicon and the geometrical irregularity play an important role in the optical properties of porous silicon[1, 2]. The porous silicon (PS) structure, with a large surface area matrix, is fabricated through electro chemical etching of single-crystal Si wafer in HF based solution [3].Silicon with various pore sizes is being used in diverse applications such as optical components, gas sensors and micro elctro chemical system (MEMS)[4].The high surface to volume ratio of PS makes it, a possible host material for the precipitation of metals for various applications[1,5].

During the last few years, Zinc oxide emerged as an important oxide material. Zinc oxide is a wide band gap semiconductor with a direct bandgap of 3.3eV at room temperature and exciton binding energy of 60meV [6-8]. ZnO has also gained much interest due to its advantages like good electrical, optical

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Studies on TiO_2 thin film deposited by spray pyrolysis technique for sensing Glucose

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Abstract - In this study, we report an effective glucose electrochemical biosensor using TiO_2 electrode. Glucose is an essential biomolecule for human beings. It serves as a source of energy for a living cell and a metabolic intermediate. TiO_2 thin film electrode was prepared by Spray pyrolysis technique. Cyclic voltammetry (CV) was used to analyse the performance of the TiO_2 as the electrochemical biosensor. TiO_2 electrochemical biosensor exhibits good sensitivity and high linearity for the detection of glucose.

Keywords: TiO_2 thin film, Spray pyrolysis technique, Cyclic voltammetry, Glucose sensor.

1. INTRODUCTION

Glucose, is a monosaccharide with a molecular formula $C_6H_{12}O_6$, is an essential biomolecule for human beings. It is also known as simple sugar or dextrose. Glucose in the blood and tissue fluids is drawn upon by all the cells of the body and used for the production of energy. The glucose found in bloodstream is referred to as blood sugar and its normal concentration is 80 to 120 mg/dL or 4.4 to 6.6 mM. Blood sugar level becomes much higher in persons suffering from diabetes mellitus. Thus detection of glucose is important in the areas of clinical diagnosis and treatment of diabetes [1].

There are several methods used for the analysis of blood glucose. They are optical, conductometric, refractometric, chromatography, amperometric, fluorometric, enzymatic method and electrochemical analysis [2-5]. In recent years the electrochemical analysis have gained attention in the investigation of important biological molecules and drugs because of their simplicity, cost effectiveness, easy handling and highly sensitive compared to other methods [6]. The objective of the work is to fabricate a metal oxide semiconductor electrode material for electrochemical biosensor to sense glucose.

Metal oxide semiconductor films have been widely studied and have received considerable attention in recent years, due to their optical and electrical properties. The metal oxide semiconductors such as TiO_2, ZnO, and SnO_2 are researched widely for various application such as optoelectronic devices, sensors, solar cells and soon. Among these semiconductors, TiO_2 thin films have many applications to engage in the field of sensors, antireflection coatings, solar cells, photo catalysts depend not only on its energy band structure but to a great extent on its crystal structure, crystallite size and morphology. Titaniumdioxide (TiO_2) is an n-type semi-conductor, which can be found in any of its three polymorphs: anatase, brookite, and rutile [7].

Environmental friendly TiO_2 thin films got interest in the field of biosensor due to its good biocompatibility, large surface area, immobilizing ability and good surface, structural, physical, chemical and optical properties. The immobilizing amount of enzymes, activity of immobilized enzymes and conductivity are the key factors for the sensitivity of biosensors [8,9].

Semiconductors in the form of thin films got greater technological importance because of their variety of advantages over bulk crystals [10]. TiO_2 thin films were fabricated by many methods including molecular beam epitaxy, spin coating, electro deposition, RF-magnetron sputtering, pulsed laser deposition (PLD), metal– organic chemical vapour deposition (MOCVD) and spray pyrolysis.

Study of the Cytotoxicity Effect of Cu (II), Co (II), Ni (II) and Zn (II) Complexes Incorporating Indole Derived N, O Bi-dentate Ligand on Cancer Cell Lines MCF-7, Hep G2 and NHDF

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Abstract - A series of Cu(II), Co(II), Ni(II) and Zn(II) metal complexes with indole derived ligand were prepared and characterized by elemental analysis, molar conductance, magnetic susceptibility, UV-Vis, FT IR and proton NMR spectral studies. These analytical and spectral studies reveal that the complexes adopt a square planar arrangement around the central metal ion. The synthesized compounds were attempted for their cytotoxicity activity. Cytotoxicity of the tested compounds were investigated by MTT [3-(4,5-dimethylthiazol-2-yl)-2,5diphenyltetrazolium bromide] assay in normal NHDF and cancerous MCF-7 and HepG2 fibroblasts. Both compounds showed cytotoxicity activity as a dose-dependent manner. Moreover, the complexes exhibit a limited cytotoxicity effect on normal cell line NHDF. The effect of cytotoxicity of synthesized metal complexes is judge against standard drug of cisplatin.

Keywords: Indole derivatives; Tryptophan; Cytotoxicity; Metal complexes; Schiff base

1. INTRODUCTION

Chemotherapy is still one of the central courses of treatments employed in the clinic for various cancer diseases, and thus immense amount of research is conducted worldwide with the aim to develop new and improved anticancer drugs. Many studies start at the chemical level, with the design and synthesis of compounds, followed by biological evaluation of the cytotoxic properties *via in vitro*. Various types of organic and inorganic compounds involve in a variety of biological processes which are very important to the life process. Mainly, the metal ions play a decisive role in biological functions such as Cytochrome c oxidase, vitamin B-12, nickel-tetrapyrrole coenzyme and cofactor F430 and carboxypeptidase. Moreover, the metal atoms coordinate with oxygen or nitrogen - terminals from proteins in diver's model that play an essential role in the conformation and function of biological molecules [1, 2]. Recent research illustrates that most of the metal complexes have potential biological activities like anti-bacterial, anti-fungal, anti-viral, anti-inflammatory and anti-cancer agents and so on [3, 4]. Among the important liable pharmacophores for biological activities, the biologically active amino acid derived ligands and their metal based compounds have selective drug actives in many pharmacological areas because of the functional groups of $–NH_2$ and -COOH coordinate to the metal ion which develops the new therapeutic targets. Moreover, among the various amino acids L-tryptophan is considered as one of the essential amino acid for human nutrition which is necessary for normal growth in infants and for nitrogen balance in adults and even its helps the body makes proteins and certain brain- signaling chemicals. Then, it has one indole ring system. This heterocyclic ring system encompasses considerable pharmacological activities [5] such as anti-vascular, anti-malarial, anti-inflammatory, anticonvulsant, chronic diabetes, HIV inhibitors and particularly in the treatment of cancer etc.

Based on the above, herein we investigate the cytotoxicity activity of our previously reported Schiff base metal complexes of Cu(II), Co(II), Ni(II) and Zn(II) obtained by the condensation reaction of 4-chloro-3-nitrobenzaldehyde and L-tryptophan. Evaluation of the anticancer activity of these metal complexes can be attained by the MTT assay. The MTT assay is usually common in cytotoxicity studies due to its accuracy, rapidity and relative simplicity.

SUBSWITCHING NUMBER OF A GRAPH

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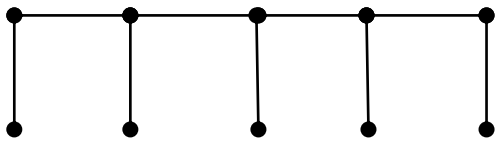
Abstract

Let G(V, E) be a graph. A vertex v∈V(G) is said to be a self vertex switching of G, if G is isomorphic to G^v, where G^v is the graph obtained from G, by deleting all edges of G incident to v and adding edges between v and the vertices which are not adjacent to v in G. A vertex v is called a subswitching vertex of a graph G if G is isomorphic to a subgraph of G^v. The subswitching number on a graph is the number of subswitching vertices in G. In this paper, we introduce this concept and find subswitching number of some standard graphs.

Keywords switching, self vertex switching, subswitching, subswitching number
AMS subject classification code (2010):05C(Primary)

1 Introduction

Throughout this paper, we consider only finite, simple, undirected graph. For notations and terminology, we refer [4]. The degree of a vertex v_i is denoted by $d(v_i)$. The comb is a graph obtained by joining a single pendant edge to each vertex of a path and its denoted by $P_n{}^oK_1$. The graph $P_5{}^oK_1$ is shown in Figure 1.1.



$P_5{}^oK_1$

Figure 1.1

A subdivision of an edge $e= uv$ of a graph G is obtained by deleting uv and then by introducing a new vertex w, and two new edges uw and vw. If each edge of the star graph $K_{1,n}$ is subdivided exactly once, then the resultant graph is called the spider graph and it is denoted by $S_1(K_{1,n})$.

The switching concept was introduced by Seidel [8]. For a graph $G(V,E)$ and a subset S of V, the *switching* of G by S is defined as the graph $G^S(V,E)$, which is obtained from G, by removing all edges between S and its complement $V\backslash S$ and adding edges between S and $V\backslash S$ which are not in G. For example, a graph G with $S= \{v_1, v_2\}$ and G^S is shown in Figure 1.2.

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Superior visible light driven photocatalytic degradation of fluoroquinolone drug norfloxacin over novel $NiWO_4$ nanorods anchored on g-C_3N_4 nanosheets

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Synthesis and Characterization Studies of CdS Nanoparticles

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Abstract – In the present work, a systematic study has been carried out to understand the synthesis, structural, surface morphological and optical properties of CdS nanoparticles. In this work, Cadmium Sulphide nanoparticle was successfully synthesized by sol-gel method at room temperatureusing cadmium nitrate and thiourea as the precursor solutions. The prepared nanoparticles were characterized by X-Ray Diffraction method (XRD), Scanning Electron Microscopy (SEM), Energy Dispersive X – ray Analysis (EDAX) and UV – Visible spectroscopy. The XRD analysis shows that the particles have crystallites with hexagonal structure along (1 0 1) plane. The grain size was found to be in the range 43.50nm. The SEM micrograph of CdS nanoparticles post annealed at 300°c reveals the uniform cloud like structure.The UV visible spectrum shows that the band gap of CdS nanoparticle is about 3.0eV.

Keywords: Sol - gel method; CdS nanoparticle; XRD; SEM.

1. INTRODUCTION

Semiconductor nanoparticles (quantum dots) have been investigated over the past years due to their specific optic, electronic and catalytic properties. These properties emerge from the high surface-to-volume ratio present in nanoparticles. Cadmium chalcogenides are well studied materials [1, 2] due to, among other interesting properties, their well-established relationship between the optical absorption and their size. Due to high stability, excellent physical, chemical and structural properties, availability, ease of preparation and handling, CdS nanomaterials can be exploited in various fields of life. In photonics, due to its photoconducting and electrical properties can be used in sensors, photodetectors, optical filters, and all optical switches[3–7]. It exhibits high photosensitivity and its band gap appears in the visible spectrum[8], enabling it to be useful for many commercial and potential applications in photovoltaics, as hetero-junction solar cells and thin film solar cells. In this work, cadmium sulfide nanoparticles were synthesized using sol-gel process; this method is not time consuming and can be developed at room temperature.

2. EXPERIMENTAL PROCEDURE

2.1 Synthesis

To prepare CdS nanoparticle, cadmium nitrate which was dissolved in 100 ml of distilled water and the solution was stirred for 30 min at room temperature.After 30 min stirring process, 2 ml of ammonia solution was introduced and then the solution was stirred for an hour at room temperature.The process was then followed by addition of thioureaprecursor into the solution.Soon after the introduction of thiourea the entire solution changed into deep yellow.

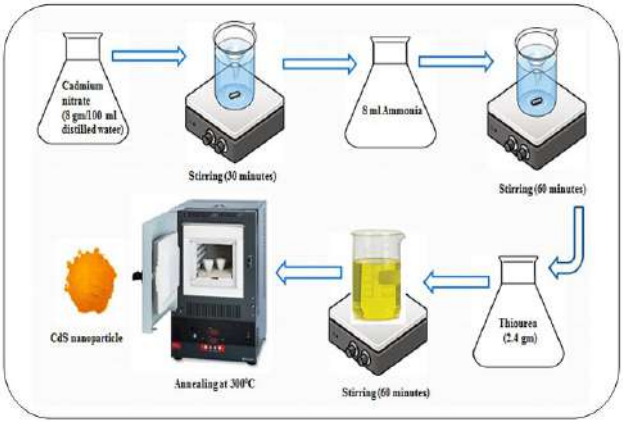

Figure 1: Mechanism used for the preparation of CdS nanoparticle

The particles are then collected in a petri dish and dried by keeping the material in a hot air oven for 3 hours with the temperature of 300°C.Then the free standing powder was collected and preserved in an air tight container. The simple mechanism to prepare CdS nanoparticle was shown in Figure 1.

3. RESULTS AND DISCUSSION

3.1 Structural Analysis

For the prepared CdS nanoparticles X – Ray diffraction (XRD) pattern was obtained using X'PERT PRO X – ray diffractometer, which was operated at 40 KV and 30 mA with

Synthesis and electrochemical analysis of TiO_2 thin film prepared by spray pyrolysis technique

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Abstract – In this study, we report electrochemical analysis of TiO_2 thin film electrode. Electrochemistry is a powerful tool to investigate reactions involving electron transfers. TiO_2 thin films got interest in electrochemistry due to its good biocompatibility, large surface area and immobilizing ability. TiO_2 thin film electrode was deposited on glass substrate by Spray pyrolysis technique. Cyclic voltammetry was used to analyze the electrochemical process of the TiO_2 thin film electrode. The electrochemical process of TiO_2 thin film electrode shows that the electron transfer rate was good. TiO_2 thin film electrode also exhibits good linearity and high stability.

Keywords: Thin films; TiO_2; Spray pyrolysis; electrochemical studies

1. INTRODUCTION

In recent years the electrochemical analysis have gained attention in the investigation of important biological molecules and drugs because of their simplicity, cost effectiveness, easy handling and highly sensitive compared to other methods [1]. Electrochemistry explains the flow of electrons into chemical changes. In inorganic chemistry, the chemical change is happened by the oxidation or reduction of a metal complex. Electrochemical cell is used to study the electrochemical processes. It usually has three electrodes and an electrolyte. An electrode is the boundary at which substrates may accept or lose electron(s). An electrolyte is required to supply electrical conductivity between the two electrodes. Cyclic voltammetry (CV) is the first experimental three electrode cell carried out for the electrochemical study of a composite, biological material or an electrode surface.

The cyclic voltammetry is a simple and easy technique and used to examine all types of electrochemical reactions. This method gives information about the reactions type observed in the method and the potentials at which they happen. The plot obtained for current versus applied potential is called as a voltammogram. It provides the quantitative and qualitative information about the species involved in the oxidation or reduction reaction. The applied potential is calculated at the reference electrode, as the counter electrode closes the electrical circuit for the current to flow. The experiments are done by the potentiostat that successfully controls the voltage between the reference and working electrode and measures the current through the counter electrode. The working, reference, and counter/auxiliary electrodes together make up a balanced three electrode system [2].

Now a day's transparent metal oxide thin films are broadly used materials in various applications. The metal oxide semiconductor thin films such as TiO_2, ZnO, and SnO_2 are widely researched and extensively considered for various applications with high performance. Among these TiO_2 is a widely used semiconductor material for various applications such as dye-sensitized solar cells, water photoelectrolysis, photocatalysis, gas sensors, Chemical Oxygen Detection (COD) sensor and biosensor [3]. Environmental friendly TiO_2 thin films got interest in the field of electrochemistry due to its good biocompatibility, immobilizing ability, large surface area and good surface, structural, physical, chemical and optical properties [4].

TiO_2 thin film electrode was fabricated by Spray pyrolysis technique. Spray Pyrolysis is a cost effective, simple and efficient technique. This technique has the capability to produce large surface area, high quality adherent films with uniformity, easiness of

Teaching Effectiveness of CollegeTeachers in relation to their Emotional Intelligence

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Abstract

Emotional Intelligence acts as an important role in social science. Emotional knowledge, intelligence and skill plays a vital role in education and helping students, teachers, faculties to attain higher degrees of achievement, career success, leadership and personal wellbeing. It rules the teacher's behavior and it is mandatory for the achievements in their profession. Teachers are regarded as the main pillar in the teaching organization. They also considered as mediators, because through them the knowledge is passed to the students. They are the effective source of knowledge because they possess the essential skills, knowledge and talents. There are five essentials components in emotional intelligence; they are Self-regulation, Self-awareness, Motivation, Empathy and Social skills. In the present scenario, the proposal of emotional intelligence among the teachers takes greater attention in the present educational system.

Key Words: Emotional intelligence, Teaching Effectiveness, Self-awareness

Introduction

Emotional intelligence is considered as expressing, understanding and managing emotions in individuals as well as in others. It is a blend of heart and mind. Emotional Intelligence is a skill to observe, manage and evaluate emotions. Emotional intelligence involves various characters such as social precision, self-awareness, to understand the others feeling, to face strong emotions, the capacity to wait for the enjoyment, and to be positive in case of difficulty. Emotional Intelligence involves a healthy emotional behavior. It includes various characters such as thinking, finding, managing and expressing feelings. Emotional Intelligence enables the individuals to react at the right place, right time and for the right purpose in a right way.

Teaching Effectiveness of Women Teachers in Relation to their Emotional Intelligence

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Introduction

Emotional Intelligence acts as an important role in social science. Emotional knowledge, intelligence and skill plays an important role in education and helping students, teachers, faculties to attain higher degrees of achievement, career success, leadership and personal wellbeing. It rules the teacher's behavior and it is important for the achievements in their profession. Teachers are regarded as the main pillar in the teaching organization. They also considered as mediators, because through them only the knowledge is passed to the students. They are the effective source of knowledge because they possess the essential skills, knowledge and talents. Emotional Intelligence involves a healthy emotional behavior. It includes various characters such as thinking, finding, managing and expressing feelings. Emotional Intelligence enables the individuals to react at the right place, right time and for the right purpose in a right way.

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The Radial Radio Number and the Clique Number of a Graph

Selvam Avadayappan, M. Bhuvaneshwari, S. Vimalajenifer

Abstract: ***Let*** $G(V(G),E(G))$ ***be a graph. A radial radio labeling, f, of a connected graph G is an assignment of positive integers to the vertices satisfying the following condition:*** $d(u,v)+|f(u)-f(v)|\geq 1+r(G)$, ***for any two distinct vertices*** $u,v\in V(G)$, ***where*** $d(u,v)$ ***and*** $r(G)$ ***denote the distance between the vertices u and v and the radius of the graph G, respectively. The span of a radial radio labeling f is the largest integer in the range of f and is denoted by span(f). The radial radio number of G,*** $r(G)$, ***is the minimum span taken over all radial radio labelingsof G. In this paper, we construct a graph a graph for which the difference between the radial radio number and the clique number is the given non negative integer.***

Keywords: diameter, frequency assignment problem, radius, radio labeling, radio number, radial radio number, radial radio number.AMS Subject Classification Code(2010):05C78

I. INTRODUCTION

In this paper, by a graph, we mean only finite, simple, undirected and connected graph. For basic notations and terminology, we follow [4]. Let $G=(V(G),E(G))$ be a graph. The *distance* $d(u,v)$ between any two vertices u and v, is the length of a shortest $(u,v)-$ path in G. The *eccentricity*, $e(u)$, of a vertex u in $V(G)$ is the distance of a vertex farthest from u. The *radius* of a graph G is the minimum eccentricity among all the vertices and is denoted by $r(G)$ or r. The *diameter* of G is the maximum eccentricity among all the vertices and is denoted by $diam(G)$ or d. The relation between $r(G)$ and $diam(G)$ is given by the inequality $r(G)\leq diam(G)\leq 2r(G)$[8]. For further details on distance in graphs, one can refer [5].

For a subset S of $V(G)$, let $<S>$ denote the induced subgraph of G induced by S. A *clique* C is a subset of $V(G)$ with maximum number of vertices such that $<C>$ is complete. The *clique number* of a graph G, denoted by $\omega(G)$ or ω, is the number of vertices in a clique of G.

In 1960's Rosa[12] introduced the concept of graph labeling. A *graph labeling* is an assignment of numbers to the vertices or edges or both, satisfying some constraints. Rosa named the labeling introduced by him as $\beta-valuation$ and later on it becomes a very famous interesting graph labeling called *graceful labeling*, which is the origin for any graph labeling problem. Motivated by the real life problems, many mathematicians introduced various labeling concepts[9]. Here, we see one of the familiar graph labelings in graph theory.

The problem of assigning frequencies to the channels for the FM radio stations is known as *Frequency Assignment Problem* (FAP). This problem was studied by W. K. Hale[10].

In a telecommunication system, the assignment of channels to FM radio stations play a vital role. Motivated by the FAP, Chartrand et al.[6] introduced the concept of radio labeling. For a given k, $1\leq k\leq diam(G)$,a *radio k-coloring*, f, is an assignment of positive integers to the vertices satisfying the following condition:

$$d(u,v)+|f(u)-f(v)|\geq 1+k \qquad (1)$$

for any two distinct vertices $u,v\in V(G)$. Whenever, $diam(G)=k$, the radio k- coloring is called a *radio labeling*[7] of G. The *span* of a radio labeling f is the largest integer in the range of f and is denoted by $span(f)$. The *radio number* of G is the minimum span taken over all radio labelings of G and is denoted by $rn(G)$. Motivated by the work of Chartrand et al., on radio labeling, KM. Kathiresan and S. Vimalajenifer[11] introduced the concept of radial radio labeling. A *radial radio labeling* f of G is a function $f:V\rightarrow\{1,2,...\}$ satisfying the condition,

$$d(u,v)+|f(u)-f(v)|\geq 1+r(G) \qquad (2)$$

for any two distinct vertices $u,v\in V(G)$. This condition is obtained by taking $k=r(G)$ in (1). The above condition is known as *radial radio condition*. The *span* of a radial radio labeling f is the largest integer in the range of f. The *radial radio number* is the minimum span taken over all radial radio labelings of G and is denoted by $rr(G)$.

That is, $rr(G)=\min_{f}\max_{v\in V(G)} f(v)$, where the minimum runs over all radial radio labelings of G.

Let f be a radial radio labeling of a graph G and let C be a clique in G.

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The Voice of Ambiguity in Thomas *Pynchon's V*

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Abstract - Thomas Pynchon's perception of culture and society along with their inherent problems, and the possibility of the eradication of those problems, in general, has aided in the development of his view of the world which seems very much guided by the contemporary science, in special. The application of the scientific concept on human reality and their finding their relevance is Pynchon's greatest endeavour. Other than entropy and thermodynamics, Pynchon also uses the concept of 'force' in the delineation of human behaviour in mass but not in an individual, which Pynchon believes is unpredictable. Pynchon had indeed succeeded in interpreting a reality of nature or world in *V*. The contemporary science and technology has led him to form a view and understanding of the working – patterns of the realities. These working patterns, he found, fit in every system of knowledge. Thus it helped him in looking at the problems of the world and at its redeeming possibilities while at the same time forming a world-view, at large, through these scientific concepts. Both Scientist and author have their own view point regarding the forces of law. This radical transformation in the understanding of the laws laid a greater impact in the understanding of human reality and existential reality on Pynchon's mind.

Keywords: Existentialism, Postmodern Condition, Cultural Labyrinths, Uncertainty

Pynchon is perhaps the most enigmatic of the American writers who has achieved considerable amount of fame and name. He belongs to the class of writers in whom there is persistent strain of suspicion towards biography and hostility towards publicity. He was associated with no rumours, no interviews, no public appearances and no pictures, even when he was chosen for the Pulitzer and the Faulkner Award he declined it. There is a constant mixing of disciplines like arts, science and music in his works. This tendency helped Pynchon to be one with peers like Bellow, Barth, Bartheleme to name a few, in reformulating a new directionality and breaking away from the traditional writers. In keeping with the ethos of the modern times, Pynchon advocates for a fractured, fragmented and discontinuous order as being contrary to the consistent and coherent old.

The fiction of sixties makes an attack on the historical and the real. But gradually experimentation became the cult thus lashing at direct historical reference. So, rejecting the pre-formed ideas of reality it tried to create its own provisional and free world of creative consciousness. A loss of signification and coherent meaning reigned high. A wave towards experimentalism was soaring. The art and literature of the decade of sixties was mainly influenced by an unmanageable stylistic glut, formal multiplicity and interfusion. The correlation between sign and signification became arbitrary on the one hand and on the other the style almost became styleless by acquiring multiple but fascinating forms like an imaginary museum or a kaleidoscope, thus, resulted in a parody. T.Rajeshwar in *Modernism and Post Modernism in English Literature* says that: "There are poems, novels, and plays in modern world literature, describing human life as an absurd, ridiculous, and superfluous phenomenon. In our day a number of people consider these works demoralizing, destructive, and refuse to accept this kind of approach" (224) All these characteristics hinted towards a new tendency, postmodernism, which is called the storehouse of styles. A further move towards experimental and avant-gardism of modernism was suggested as the basic trend in postmodernism but at the same time it disregarded its high seriousness and hope for any formal totality and transcendence.

Thomas Pynchon is one writer who remarkably represents this 'break away' trend of the modern discontinuity in his works. His area of grotesque begins in the historical world, well depicting the psychic imbalances and cultural disruption of Nazi and wartime America and Europe. The characters of Pynchon are made such, who can't skillfully

handle the inchoate and variegated world in which they find themselves agaped and driven along. So, the determining factor in Pynchon's writings is the text which runs by an extensive and often expository discursiveness. It functions on the interface between two levels of experience one, the experience of hyperactivity and excess and the other one of hermetic containment. These essential postmodernist experiences and mannerisms have provided a direction to Pynchon's work.

The graphic plot in his first novel *V*. is on discontinuity. There are two complete stories which run parallel and overlap through the enigmatic initial which is the title of the book *V*. Thus V. is a mysterious and dangerous woman whose numerous identities and loyalties are of shifting type. The two plots of the novel are brought close to each other in search of V via the investigation of her plot. Pynchon also successfully attempts to concede with this plot, the unraveling of the bogus plot of which the characters are the victims. The second novel, *The crying of Lot 49*, seems astonishing as being very short and classical in its pace and economy. It is a very elegantly crafted novel and doesn't show an exercise in the narrative form. Pynchon's interest in absurd and black humour comes in the foreground in this novel also. The two aspects of personality, head and heart get amalgamated in the central figure, the chief investigatrix, Oedipa Mass. She is given a work to solve the puzzle of Pierce Inverarity's enmeshment which challenges her own sanity. The novel has tried to rediscover the Oedipus myth as the tragi – comedy of rationalism, which tries to categorize and understand the deep – rooted complexities of its own life. The figure of Oedipus includes binaries in itself: masculine and feminine, passionate and intellectual, quester and the object, victim of the quest and its victimizer. The choice of language had always been a problem for an artist and Pynchon derives his language from the theory of information technology in this novel. In the science of information theory, the information transmitted by a signal depends upon the inverse ratio of noise, redundancy and non – information. The type and quality of any information transmitted by the element is in accordance to the negative logarithm of its predictability in transmission. In other words, a medium can become full of information with separate facts derived from them. Though there is disparity at the surface but it doesn't hide the coherence which is at the deeper level. The next novel *Gravity's Rainbow* is about the nightmare dreamt by a British Intelligence Officer during the World War II of V-2 bombardments which would affect his mental powers. Whole of the novel is either dream – like or nightmarish. This logic of dream has an impact of existentialism. Pynchon feels the need of using language as significant signs and must enter a post – humanist space. He also tries to grapple with the problem of communication and the structurelessness created by its own self. But the method that he has adopted is one to evolve a continuous hypothesis through the layers of discontinuities.

The whole environment and situation is replete with death, decay and decline whether be it the real desert or modern society both are shown as garbage heap. Every situation disintegrates into chaos or decay. A drift towards the mechanical and inanimate is over – emphasized. The old Renaissance system, civilization and buildings are disintegrating with the hints of extinction and dehumanization thus quickening the entropic processes of human kind. Benny Profane in his imagination converses with a machine called SHROUD (Synthetic Human Radiation Output Determined) which echoes a worrying parody of human existence where the man is heading towards in this age. Benny, a layman is unable to conceive or understand the direction of his walk. That Man is moving towards future with too much dependence on the inanimate machines. Pynchon has tried to bring out a

starting point of human extinction from the old imperialist events linked in extenuation to the process with Hitler, contemporary automotation, tourism and the Whole Sick Crew – this might be the crux of the novel.

It is a general agreement that historical chapters are weighter than contemporary one, but it does give a valuable contribution in shaping up the theme of the novel. Benny Profane appears suddenly in the first chapter of the book without any introduction or history suggesting that his existence matter only for the present. He keeps shifting from one job to another and his life is full of violent parties, this clearly indicates that he is not a conventional character but a 'free wheeling character' where the character experiments and produces a contrast of unsettled provisional life to the domestic sobriety of Victorian or Renaissance age. In the first chapter, during the drinking session he says in second person: "Try to squeeze a water melon into a small tumbler sometime when your reflexes are not so good. It is next to impossible" (18). The emotional life given to Profane is uncontrolled and aimless, suggested by his sympathy for derelicts and bums, nostalgia for Depression and his involvement in other's tensions. In this way Profane is attributed no specific clear role, but of a derelict where chance fights and escapades are constant throughout the book.

Thus, an uncertainty surrounds Profane. A truncated character is suggested by the lable of 'schemihl' and 'yo-yo' given to him in the title of the first chapter by Pynchon. In this way by accepting this label he himself reduces his existence at the same time to an amoeba – like passivity.

The second lable 'yo – yo' suggests the endless aimlessness of everything in life and calls for a look into the movement of his life which is one of Profane's determinants, wherever he goes he just 'happens' to pass whether through Norfolk or Virginia, New York, shuttle or later in Staten Island Ferry. Profane is one of those absurd figures who happen to be same throughout and at the mercy of chance without any persistent change, that his clothes are also same in the end as at his first entry in the narrative. So the movement of his 'yo-yo' like life is to kill the monotony of life. In this way Profane is just an attenuated and lethargic version of 'Beat mobility' who disappears into the deluge of darkness at the novel's end.

It is through Profane that we come across a group of New Yorkers collectively called Whole Sick Crew. The members of this Whole Sick Crew participate in a common lethargy. They are a product of their machine – driven environment. Through them Pynchon elucidates that the Edenic Garden has transformed into Machine. The two computers SHROUD and SHOCK (Synthetic Human Object Causality Kinematics) reflects the barren future for man and an extension of mankind. This degeneracy of mankind into machine is most visible in Whole Sick Crew. They are the impersonations of poverty and rebellion of artistic souls, "most of them worked for a living and obtained the substance of their conversation from the pages of Time Magazine" (56-57), and their avant-gardism is dismissed. Their motionlessness is projected by a range of static images and when they move their movement is restricted to monotonous and repetitive ones, from one party to another. The emotion of love for whole Sick Crew is restricted only to mechanical activity. The whole of the group comes out as a self – deceived lot excessively involved in the consumer network.

In the second main plot which sets up the historical chapters of the novel is the research work of Herbert Stencil to trace out a mysterious and dangerous woman V. Though the historical chapters are quite self – contained but still some seems overlapping into the modern chapters. Pynchon has designed Stencil's search for information with Whole

Sick Crew at its periphery and his route is intersected by Profane that urgently reminds the intersecting paths of Stephen and Bloom in Ulysses. Stencil can be viewed as a "century's child and he is fulfilling that role by representing modern man in quest for reality. Prior to War he was a derelict like Profane and got into some unmeaningful action by the journals of his father so, he becomes a representative of those American heroes who are adrift in lethargic aimlessness. Through the references of V. in his father's journals he finds a reason for motion. Otherwise he was a victim of sleep and inertia. So, he shapes out his quest for V. through some deft clues but its success is terrifying also as it will again push him back to inertia and sleep. Again everything and every situation would disintegrate into entropic processes. So, to keep 'active a borderline metabolism' Stencil adopts a strategy of 'Approach and Avoid'. This strategy can give some aid in maintaining consciousness and meaningful action but it does project the inherent solipsism implicit in them. All his techniques of self – extension and self – duplication are a means of furthering his quest and distancing any direct contact with reality. The faint clues of V. which he has transformed into fantasy becomes his obsession.

Stencil is locked in the hothouse of history and Profane wandering in the streets of modern world, which is his natural domain. Profane has come from nowhere and in the end disappears into the darkness of nowhere. The street is an area of waking with absolute present and meaninglessness, unaware and indifferent to patterns and clues which Stencil is observed with. He confesses that he has learnt nothing from his roaming up and down the streets of world other than to be frightened of them. Stencil fits into this zone of hothouse which is a region of memory, when mind is sealed up with past memories. And under the street is an area of dream to seek some temporary peace and oblivion. This is the domain where artists descend to flourish their imagination. The three domains are the three levels of consciousness which hints at human need to make fantasies.

The main action of the novel is to unravel the mysteries surrounded around *V*. She is shown as a woman wrapped in a number of disguises as for example Victoria Wren, Hedwig Vogelsang, Veronica Manganese, a mysterious lady in Paris, a Bad Priest in Malta, a number of other references suggested by letter V. A number of such references puzzles Stencil as well as the reader to reach the correct V. The true identity of V. remains indispensible even at the end. V. is considered as a warehouse of knowledge. When the readers expectations get undermined and a number of possibilities are placed before him then he attempts to search a meaning himself and cannot get outside the novel. It is for reader's involvement technique that Pynchon uses ellipses, jumps over space and time, shifting from lyrical reverie to a nightmare, multiple interpretations, disorientation of systems and patterns or denying any kind of finality.

The denial of any finality is evident in Calvinism also which believes in sticking to binaries and negates any possibility for middle ground. So, whichever Pynchon's character tries to leave the fixed polarity of his identity and encompasses this middle ground he gets victimized by a controlling system which again aims to give him a fixed identity. Bowing down to this control means accepting a mechanical life which is most akin to an inanimate and escape seems an impossibility. The only way to escape is through humanistic responses to life confinements. In *V*., *The Crying of Lot 49* and *Gravity's Rainbow*, the characters could renew their vitality only by descending into the underworld of their vitality only by descending into the underworld of their gutters and by drawing those energizing faculties of culture which had been dumped as waste by the power mongers, which hindered their effort of control. In this way, Pynchon undermines the empirical

determinacy of Western worldview by satirizing such characters, disrupting the traditional narrative pattern and favouring the anarchic humanism by highlighting the threats of overdependence on rationalism. Thus, Pynchon demands from the new age to shed the reliance on old established names and invent their own act of naming and terminology. Like the way he himself used word Luddite for counter – revolutionaries who denies rational arrangement of mechanics in the world. The Luddites according to Pynchon was a group in Britain between 1811 – 1816 who objected the use of machinery that replaced them in the textile industry. They broke their loyalties with British king and joined the mythical king Ludd who in 1779 in a fit of insanity destroyed two knitting hosiery machines in a house. Thus, the anti – mechanizationists started calling themselves Luddites.

Moreover, to bring a change in the new point of view in the society, pynchon tries to convert his readers through his Luddite – plots, such plots deny any reliability on rationality. He tries to free the Western Psyche from any sort of colonialism. So, Pynchon becomes a moralist as well, along with being a fabulist, detective, black humourist and so on. He appears a self – effacing saviour of the doom by recording the conscience-death of our culture and makes vocal the salvational alternatives and possibilities. Indeed, Pynchon's work has registered and catalogued every aspect of modern man's history in a fragmented and chaotic manner. The obscurant aspect is leant to his work by the full range of allusions used. But his allusions whether scientific or artistic have a pattern which provides his work a unity. These patterns exhibit an antinomy between entropic, void ward drift visible in the materialistic view of things and the possibilities for transcendence suggested in the spiritual view.

In *V.*, Pynchon has made use of Botticelli's painting The Birth of Venus as an allusion. The painting is of lovely goddess Venus who is portrayed in all her perfection, beauty and innocence. There are two plots in the novel that run parallel to each other, one is set in the present, i.e., fifties of the ninteenth century and the other at the turn of the century leading up to the present. The protagonist of the first plot is Benny Profane and of the other one is Stencil. Stencil takes up a great task of resolving the mystery of a woman, V., who happens to be his mother but she is also projected as the archetypal Terrible Mother by the mytho-graphers. At the outset she is shown as an ingenuous young English lady, Victoria Wren and is thus alluded to Botticelli's painting Birth of Venus but gradually, there is transformation of Victoria Wren into V, in Florence which gives occasion to make the painting an ironic emblem of V's decadent character graph. In Pynchon's imaginary Florence of 1899, a freelance political operative, Raphael Mantissa, appreciates and tries to seek in the painting something that's lacking in his life, i.e., transcendence and perfection. According to the author he belongs to 'a circle...whose outer rim was tangent to rims enclosing the – Decadents of England and France, the Generation of '98 in Spain, for whom the continent of Europe was like a gallery one is familiar with but long weary of' (160) Pynchon tries to build a connection between the rise of fascism and the downfall of aestheticism.

In the beginning, Pynchon presents Victoria Wren as an idealized incarnation of Goddess Venus, but gradually her image gets distorted which complacents to the 20th century environment and thus out of the beautiful and strangely religious Victoria Wren emerges a creature of horror and darkness. Through her, Pynchon gives a peep inside the decadent Western culture and provides a contrast for pupal stage of being which will eventually embody that culture's decadence. Botticelli's Birth of Venus stands in sharp contrast to the birth of V-ness. Where the pure and perfect

beauty of Venus is born in daylight out of the breezy Aegean Sea, the creature of horror and darkness is born at night in the midst of chaos and confusion. So, the birth of V. celebrates the decline of all the cultural sanctities of the civilization. In this way, the painting takes a new connotation and stands for all that is inclusive in V by the new dispensation. Its subject, Venus, is no more a pious beauty but gets transformed into a beauty of terror and darkness, so the subject is displaced. The action of the birth of goddess is travestied. It has lost its position as an aesthetic epitome and fails to soothe the melancholic anarchist's soul. V is seen as Vheissu, a viod, a falasity; so, the painting suffers multiple degradation.

Pynchon's text are regarded as allegories, for his narratives try to seek values and interest affected by the discourses of truth. Pynchon directs his narration in the pursuit of truth and narrative tries to seek enlightenment and brings consciousness of the manners in which views of culture are used to sustain cultural power at the expense of individual freedom. And, generally, allegory interprets that human activity which works between the culture and the individual consciousness. And through this individual allegorical text it is possible to show a self – conscious document of the manner in which cultural discourses find social validation and also how they authorize certain configurations of cultural power.

Both narrative and absolute truth are conflated in the similar quasi transcendental source of legitimation which is invoked for both culture and society. So, allegory engages itself in not just the political, social and economic realities of culture but also in the justification of explanations of those realities provided by culture.

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VERTEX CUT SPLITTING GRAPHS

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Abstract

Let G(V,E) be a simple and undirected graph. For a graph G, the splitting graph S(G), is obtained by adding a new vertex v' corresponding to each vertex v of G and joining v' to all vertices which are adjacent to v in G. Here, we introduce a new type of splitting graph called vertex cut splitting graph and we define it as follows: Let G be a graph and $S_1,S_2,S_3,\ldots,S_\alpha$ be the minimum vertex cuts in G. The vertex cut splitting graph VS(G) of a graph G is the graph obtained from G by adding new vertices $w_1,w_2,w_3,\ldots,w_\alpha$ and joining w_i to each vertex in S_i where $1 \leq i \leq \alpha$. In this paper, we establish some results on vertex cut splitting graphs.

Keywords : *splitting graph, vertex cut , vertex cut splitting graph, minimum vertex cut splitting graph.*

AMS Subject Classification Code (2010):*05C(Primary)*

1. INTRODUCTION

Throughout this paper, we consider only finite, simple and undirected graphs. For notations and terminology, we refer [4]. Let *G(V,E)* be any graph. A graph with *n* vertices and *m* edges is denoted by *(n,m)-graph*. A *cycle* of length *n* is denoted by C_n where as P_n denotes a *path* on *n* vertices. The *complete graph* on *n* vertices is denoted by K_n. The *complete bipartite* graph is denoted by $K_{n,m}$. In a graph G, *degree* of a vertex *v* is denoted by *d(v).*

A *full vertex* is a vertex *v* in *G* which is adjacent to all other vertices of *G*. A graph *G* is said to be *r-regular*, if every vertex of *G* has degree r. For any two integers *x* and y, $x \neq y$, a *(x,y)- biregular* graph is a graph in which every vertex is of degree either *x* or *y*. A *unicyclic* graph is a graph it contains exactly one cycle.

For any two vertices *u* and *v*, the *distance d(u,v)* in *G* is the length of a shortest path between *u* and *v*. The *diameter* of G is defined as $max\{d(u,v)/\ u,v \in V(G)\}$ and is denoted by *diam G*. The *eccentricity* of *u* is denoted by *e(u)* and defined by $e(v)= max\{d(u,v)/\ v \in V(G)\}$. The *radius* of *G*, *r(G)* is the minimum eccentricity of *G*. A vertex *v* of *G* is called a *central vertex*, if $e(v)= r(G)$. The set of all central vertices is called the *center* of *G*. Let $G \vee H$ denote the join of two graphs *G* and *H*. Note that $C_n \vee K_1$ is the *wheel* graph.

Vision of Contemporary Multicultural London in Farrukh Dhondy's *East End at Your Feet*

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Farrukh Dhondy, is a British writer and activist of Indian Parsi descent. *East End at Your Feet* is a collection of six stories about London teenagers from Asian and English families. The author describes, through the teengers' eyes, their life in Britain today. Short Stories are a perennial treasure of scintillating wisdom. Usha Bande and Atma Ram feels that:

The Short Story, as a literary genre, has a unique position in the modern era. Man's life today is hectic and he is hard pressed for time. Such a social institution has given rise to the popularity of Short Story as one can satisfy one's literary urge within the limits of time at his or her disposal. (33)

The Short Story writers have a broad horizon and vision. They seem to comprehend their culture and mode of life in clear perspective and place within the flux of time. Among the major exponents who have contributed to the development of this genre, Farrukh Dhondy holds a unique position.

"Pushy's Pimples" short story mainly deals with typically teenage problems (i.e. suffering from acne), the question of a teenager when to have sex for the first time, but also with conflicts arising from different attitudes of Indian parents and their children raised in Britain.

15-year-old Puspha (or Pushy) learns 'facts of life' not from her parents, but from Michelle, her English school friend. The story tells how Michelle is going to acquaint Pushy with Steve, a friend of Michelle's acquaintances. They all want to meet at Pushy's house when her parents won't be at home. Although Pushy has arranged everything for the meeting, something goes wrong and the story finishes with a surprise ending. In the story, "*K.B.W.* (Keep Britain White)," is a story about racial conflicts among blacks, whites, Indians, Pakis and Bangladeshis. They all live in run-down housing estates in Hackney, East London. The story is told from the view of an Indian schoolboy, who is friendly with Tahir from Bangladesh who has only recently arrived in London. They both are respected for playing cricket in the school's cricket team. Life in the housing estate suddenly becomes violent when some white youngsters begin to molest and attack the Asian residents. They paint insulting slogans (like 'KBW') onto the walls of the estate and even smash windows. When Tahir's sister Jenny is made the scapegoat for spreading typhoid in her community, things get out of control and Tahir's family leaves the estate. In *Good At Art* Raju doesn't feel comfortable at his school because of his shyness. He doesn't have any real friends. His parents are Indian immigrants. His command of English is good but he is extremely reluctant to talk to anybody of his peers. His only strong point is his talent for art. His new art teacher who comes from Pakistan immediately discovers how gifted he is. Raju, however, suffers most from his inability to address a girl. He simply doesn't know how to invite a girl for a drink or watching a film. The only way how to express himself is by painting. That's why he paints a picture of Kim, an English girl who seems to be interested in him and his country of birth.

A teenager is known to be good or bad according to the way he behaves towards others and under certain circumstances. When his/her habits are good, he/she is known to be a smart fellow. A boy/girl with proper manners attracts the attention and admiration of everyone, whereas the boy/girl with ill manners draws to himself/herself the ridicule and contempt of others. London consists of multiplicity of cultures. From time to time, a variety of people from different socio-cultural backgrounds have sought refuge in London. Multi-Culturalism is an essential aspect of the London scene that is reflected in the works of the writers. Exile of some ilk is becoming an increasingly ineluctable aspect of human experience. Even the dwindling minority who can reasonably remain in one physical location throughout life are likely to experience dislocation across time. Among the many challenges

Acid Aggression Against Women : A Study of Namita Gokhale's *The Book of Shadows*

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In Hindu traditions, women is considered as a silent sufferer. She has been a secondary status whether it is in family or in the society. In Indian English Literature, fiction by women writers constitutes a major segment. The women writers face much struggle to establish their identity and also to assert their own individuality. Today's woman desires her just a right place in the society.

Namita Gokhale is a writer and publisher. She is one of the founders and co-directors of the Jaipur Literature Festival. Her first novel, *Paro: Dreams of Passion* became very famous. Namita Gokhale has written a hand full of novels and two works of nonfiction. *The Book of Shadows* is the best appreciated fiction. The publisher says, "Part ghost story, part erotic romance, The Book of Shadows is an ambitious book that investigates the nature of reality, love and faith. It is a work of startling originality by one of India's most daring and talented writers."

All the novels of Namita Gokale reveal the restriction of human being by her association with social customs that reflect her connections with the object world. In her novels, the women characters undergo moments of excruciating mental torture deep within themselves, and marriages are often presented as an experience of conflict, frustration and a long dawn period of stress. Rachita Tiwari in *The Book of Shadows*, certainly has the mentality and will power of their own.

The Book of Shadows is a fine texture of her experience of Delhi life and her intimacy for the Himalayan World. The novel initiated with the formal and full of egoistic life of Delhi.

In *The Book of Shadows,* the protagonist is Rachita Tiwari. Rachita lived in a remote house. It is situated in the Himalayan foothills. The novelist has also lived in that house. She explained it in her Note.

Now-a-days acid attacks on women increases. They suffer a lot. They may blind. They may get disfigured faces. There are many girls and women face much problems like denied marriage or even getting employment. There is a direct for inheritances, dowries, jealousy. Women are the first victim. That too, they are attacked by acid. The reason behind is, the acid is the cheapest object. Women become sufferer. They may even face the death.

In the novel, *The Book of Shadows,* Rachita's fiance is Anand. Anand committed suicide. He hung himself in the room itself. It was such apathetic scene in this novel. "Who was this swaying on a rope before me? This was not my lover, the stroker of my brow. It was an unbearable excess of all that was possible and bearable. There was defeat here, and a loss of dignity. This travesty of not-life was not how death was to be faced: of this I was sure."

Anand's sister was very angry with Rachita. She planned to do the acid attack on Rachita. Though Anand's sister was a lecturer, she couldn't bear her brother's death. As she was the lecturer of Chemistry, it was very easy to get the acid for her.

Most of the protagonists in Gokhale's novel like lonely in their lives. After getting the acid attack, Rachita too decided to live the lonely life. She wanted to heal her wounds. Usually in Gokhale's novels, each heroine wanted to live alone in their family, but Rachita moved far away from the city environment as well as from her family. She says, "I have come to the hills to heal, to hide, to forget. To forgive, to be forgiven. My friends all resisted my decision. My sister even insisted on accompanying me here, but I knew that I needed solitude and soliloquy to come to terms with what had happened."

It is believed that males are known for knowledge, power, consciousness, strong action, while females are known for their feeling touch, weak action, and domestic intimacy. Some of these characteristics are not absolutely in the case of Rachita. She is distinct from others. She is not a doomed character but she is self aware and optimistic. As she remarks, "Proprioception is the science

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Zeolite nanorods decorated g-C_3N_4 nanosheets: A novel platform for the photodegradation of hazardous water contaminants

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Document details - Construction of heterostructure CoWO₄/g-C₃N₄ nanocomposite as an efficient visible-light photocatalyst for norfloxacin degradation

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Construction of heterostructure $CoWO_4/g\text{-}C_3N_4$ nanocomposite as an efficient visible-light photocatalyst for norfloxacin degradation(Article)

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Abstract

The $CoWO_4$ nanoparticles assembled with $g\text{-}C_3N_4$ nanosheets were successfully fabricated by means of a simple hydrothermal method, followed by ultrasonication. The surface topography, crystalline structure, chemical status, and optical properties of as-prepared materials are well characterized herein. These studies unveil the formation of $CoWO_4$ nanoparticles assembled on the surface of $g\text{-}C_3N_4$ nanosheets with good crystallinity. EDX and XPS studies substantiated that there were no impurities in the synthesized photocatalyst materials. Furthermore, surface topographical (TEM) analysis affirms that $CoWO_4$ nanoparticles were successfully anchored to $g\text{-}C_3N_4$ nanosheet. This worthy interfacial contact between $CoWO_4$ and $g\text{-}C_3N_4$ leads the transfer and separation of photo-induced charge carriers. The effect of catalyst loading and initial substrate concentrations on photocatalytic degradation of norfloxacin by as-prepared samples were examined under visible light. We found that the rate of $CoWO_4$ and $g\text{-}C_3N_4$ photocatalytic degradation of norfloxacin was 3.18 times and 2.69 times higher than that of pure $g\text{-}C_3N_4$ and $CoWO_4$, respectively. Enhanced photocatalytic activity was because the synergism between $CoWO_4$ nanoparticles and $g\text{-}C_3N_4$ nanosheets inhibit the fast recombination of photogenerated e^-–h^+ pairs. In addition, the radical scavenger study substantiates that $^{[rad]}OH$ plays dominate role for norfloxacin degradation rather than $O_2^{[rad]-}$. A possible mechanism responsible for photodegradation of the Z-scheme was ultimately proposed. This work can be useful in the rational design and delivery of new types of Z-scheme photocatalysts.

Author keywords

$CoWO_4/g\text{-}C_3N_4$ Kinetics Norfloxacin Synergistic effect Visible light

Indexed keywords

Engineering controlled terms: Carrier mobility Crystallinity Enzyme kinetics Impurities Light Nanocrystalline materials Nanoparticles Nanosheets Optical properties Topography

Engineering uncontrolled terms: CoWO4/g-C3N4 Effect of catalyst loadings Norfloxacin Photo catalytic degradation Substrate concentrations Synergistic effect Visible light Visible-light photocatalysts

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Document details - Gold vs Gold Exchange Traded Funds: An Empirical Study in India

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Gold vs Gold Exchange Traded Funds: An Empirical Study in India(Article) (Open Access)

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Abstract

This study aim of this is to estimate the relationship between gold and Gold Exchange Traded Fund (ETF) and the performance of Gold ETFs in India by using various statistical models. The data for the study covers a period of three years from 2015 to 2018. The data was collected from the National Stock Exchange database and other sources. The outcome of this study was to find out whether there is a relationship between gold and Gold ETFs. It was found out that Gold ETFs has more returns than the physical gold; Axis ETF performed the best among those Gold ETFs selected for the study. This study will be beneficial for the market researchers and investors who find the best opportunities in the Gold ETFs. © 2019 EA. All rights reserved.

Author keywords

Correlation | Fama's Measure | Gold vs Gold ETFs | Jensen's Index | Sharpe's Index | Treynor's Index

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Document details - Non-linear structural and surface morphological modifications due to gamma irradiation in p-type porous silicon

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Non-linear structural and surface morphological modifications due to gamma irradiation in p-type porous silicon(Article)

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Abstract

The effect of gamma irradiation on the morphology and electrical properties of p-type porous silicon prepared by electro-chemical etching is investigated after total irradiation dose of 0.5Gy, 2Gy, 5Gy and 10Gy by gamma radiation from the ^{137}Cs radiation source. Structural changes are studied with the support of X-Ray Diffraction, Scanning Electron Microscope, Fourier Transform Infra-Red spectroscopy, Atomic Force Microscope and the electrical property changes are investigated by I–V characterization. X-Ray Diffraction peak at Si(400) showed peak broadening with increasing gamma dose. The size of crystallite in the PSi samples as prepared is 119.54 nm and it is reduced to 14.79 nm for the PSi sample irradiated with the gamma dose of 10 Gy. The irradiated PSi samples show a non-linear reduction in crystallite size and exhibit radiation hardness for the total gamma irradiation dose ≤ 5Gy. Scanning Electron Microscope images of the irradiated PSi revealed a wide variation in pore diameter from 14.794 nm to 105.324 nm for the gamma dose increased from 0.5 Gy to 10 Gy. Roughness in the irradiated sample decreased with increase in gamma dose. The change in the structural properties of the irradiated PSi samples is nonlinear while the electrical property is linear with the increase of gamma dose and dependent on the total gamma dose. © 2019 Elsevier Ltd

Author keywords

Atomic Force Microscope | Dislocation density | Gamma irradiation | Gray | p-type porous silicon | Porous silicon | Roughness | Total irradiation dose

Indexed keywords

Engineering controlled terms: Atomic force microscopy | Crystal atomic structure | Crystallite size | Etching | Irradiation | Morphology | Porous silicon | Scanning electron microscopy | Silicon compounds | Surface roughness | X ray diffraction

Engineering uncontrolled terms: Dislocation densities | Gamma irradiation | Gray | Irradiation dose | P-type

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1D/2D $MnWO_4$ nanorods anchored on g-C_3N_4 nanosheets for enhanced photocatalytic degradation ofloxacin under visible light irradiation(Article)

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Abstract

Herein, $MnWO_4$ nanorods coupled with g-C_3N_4 nanosheets were fabricated by a simple hydrothermal method, followed by an ultrasonication method. Morphological features, chemical composition, optical properties and crystallographic information of the prepared materials were obtained using SEM-EDX, TEM, XRD, XPS, FT-IR, UV–vis DRS, and PL techniques. The synthesized $MnWO_4$@g-C_3N_4 nanocomposite displayed excellent photocatalytic activity towards ofloxacin (OFX) under visible light irradiation. Moreover, the influence of reaction parameters such as the catalyst dosage, pollutant concentration and presence of inorganic anions (Cl^-, $CO_{32-\text{ and }SO42}{}^-$), was investigated during the photocatalytic process. Notably, among the inorganic anions, $SO_4{}^{2-}$ and $CO_{32}{}^-$ significantly hampered OFX degradation, while Cl^- ions showed minimal effect on the degradation process. The apparent rate constant for $MnWO_4$@g-C_3N_4 from first order kinetics was 3.5 and 4.8 times higher than that of pure g-C_3N_4 and $MnWO_4$, respectively. Based on the obtained results, the possible charge transfer mechanism was proposed. The enhanced photocatalytic performance of the binary nanocomposite could be ascribed to the synergistic effect between $MnWO_4$ nanorods and g-C_3N_4 nanosheets resulting in efficient visible light utilization and inhibition of the charge carrier recombination. This work demonstrates the potential application of $MnWO_4$@g-C_3N_4 nanostructures in the photocatalytic removal of emerging pollutants in water.

Author keywords

Emerging pollutants | $MnWO_4$@g-C_3N_4 | Ofloxacin | Photocatalysis | Water treatment

Indexed keywords

Engineering controlled terms: Charge transfer | Ions | Irradiation | Light | Nanocomposites | Nanorods | Nanosheets | Optical properties | Photocatalysis | Photocatalytic activity | Photodegradation | Rate constants | Water pollution | Water treatment

Engineering uncontrolled terms: Charge carrier recombination | Crystallographic information | Emerging pollutants | Excellent photocatalytic activities | MnWO4@g-C3N4 | Ofloxacin | Photo catalytic degradation | Photocatalytic performance

Engineering main heading: Manganese compounds

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EMTREE medical terms:

Article | chemical composition | drug degradation | irradiation | photocatalysis | photoluminescence | priority journal | scanning electron microscopy | synergistic effect | transmission electron microscopy | X ray diffraction | X ray photoemission spectroscopy

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View additional affiliations

Abstract

Over the years, there has been an increase in the number of countries facing water stress and scarcity resulting from persistent high temperatures and prolonged dry conditions. These conditions result in an insufficient supply of clean water for human consumption and agricultural purposes. The situation is further compounded by water pollution by organic, inorganic, and microbial species that render some of the available water unusable. Therefore, there is a need to develop advanced water treatment technologies that can complement the current methods to ensure efficient water and wastewater treatment. Efficient treatment of wastewater is key in augmenting the fresh water supply and such water can also be used for crop irrigation, thereby reducing the demand for fresh water. This chapter presents a concise review of the application of various graphene quantum dot-derived nanostructures in water treatment. Such nanostructures have been explored in the catalytic removal of organic pollutants and inorganics as well as the abatement of microbial pollution. Furthermore, graphene quantum dot materials have been exploited as adsorbents as well as additives in membranes to improve water flux, rejection properties, and antifouling behavior. Graphene quantum dot-based nanostructures are promising materials toward water treatment to ensure adequate food supply and security.

Author keywords

Disinfection | Graphene quantum dots | Nanocomposites | Photocatalysis | Water pollution

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Document Type: Book Chapter
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Publisher: Elsevier

Mamba, G.; Nanotechnology and Water Sustainability Research Unit, College of Science, Engineering and Technology, University of South Africa, Roodepoort, South Africa

Chapters in this book

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27 chapters found in Scopus

- Effect of nanocarbons on physical and mechanical properties of soils
- Interaction of carbon nanotubes with rhizosphere microbial communities
- Nanocarbons: Antibacterial, antifungal, and antiviral activity and the underlying mechanism
- Toxic and beneficial effects of carbon nanomaterials on human and animal health
- Carbon nanomaterials (CNTs) phytotoxicity: Quo vadis?
- Application of Carbon-Based Nanomaterials in Food Preservation Area
- Risk management and regulatory aspects of carbon nanomaterials

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Tran, H.M. , Nguyen, N.T. , Nguyen, X.T.

Synthesis and characterization of N-doped graphene oxide quantum dots/Fe-BDC composite for methylene blue decomposition

(2024) Chemical Engineering Communications

Majumder, S. , Dhara, B. , Mitra, A.K.

Applications and implications of carbon nanotubes for the sequestration of organic and inorganic pollutants from wastewater

(2023) Environmental Science and Pollution Research

Oves, M. , Ansari, M.O. , Ismail, I.M.I.

Graphene quantum dot application in water purification

(2023) Graphene Quantum Dots: Biomedical and Environmental Sustainability Applications

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Document details - Facile synthesis, vibrational, optical and improved luminescence properties analysis of Ca₂KZn₂V₃O₁₂ phosphor

Materials Research Express

Volume 6, Issue 11, 6 November 2019, Article number 116329

Facile synthesis, vibrational, optical and improved luminescence properties analysis of $Ca_2KZn_2V_3O_{12}$ phosphor(Article)

Jeyakumaran, T., Venkatesh Bharathi, N., Sriramachandran, P., Shanmugavel, R., Ramaswamy, S.

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[b]Physics Research Centre, V.H.N.S.N. College, Virudhunagar, Tamilnadu, 626 001, India

Abstract

A self-activated $Ca_2KZn_2V_3O_{12}$ (CKZVO) phosphor was synthesized by the solid state reaction method under different calcination temperatures. A high crystalline single-phased CKZVO material occurred at 600 °C belongs to the cubic structure with Iad space group. The vibrational modes were characterized by IR and Raman spectra. All the samples consist of intense absorption spectra in UV region owing to charge transfer of $(VO_4)^{3-}$ tetrahedral group and the band gap energy of the single-phased CKZVO phosphor was found to be 3.2 eV. Photoluminescence broad emission spectrum ranging from 400 to 700 nm, ascribing to the charge transfer in $(VO_4)^{3-}$ tetrahedral group. The colorific properties of the single-phased CKZVO phosphor was investigated and reported. Ultimately, the device performance showed that the self-activated $Ca_2KZn_2V_3O_{12}$ phosphor served as a potentially applicable candidate in UV chip excited white LED applications.

Author keywords

photoluminescence | self-activated | solid-state reaction | white LEDs

Indexed keywords

Engineering controlled terms: Charge transfer | Emission spectroscopy | Energy gap | Light emitting diodes | Photoluminescence | Solid state reactions

Engineering uncontrolled terms: Calcination temperature | Device performance | Emission spectrums | IR and Raman spectra | Luminescence properties | self-activated | Solid state reaction method | White LED

Engineering main heading: Phosphors

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Original language: English
DOI: 10.1088/2053-1591/ab51b8
Document Type: Article
Publisher: Institute of Physics Publishing

Prominence percentile:

Document details - Green synthesis of naphtho[2,3-f]quinolin-13-one and naphtho[2,3-a]acridin-1(2H)-one derivatives catalyzed by heteropoly acid supported montmorillonite K-10 clay

Synthetic Communications

Volume 49, Issue 21, 2 November 2019, Pages 2856-2868

Green synthesis of naphtho[2,3-f]quinolin-13-one and naphtho[2,3-a]acridin-1(2H)-one derivatives catalyzed by heteropoly acid supported montmorillonite K-10 clay(Article)

Kumaresan, M., Karthika, V., Selvakumar, K., Sami, P.

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[b]Nanomaterials Laboratory, Department of Chemistry, International Research Centre, Kalasalingam Academy of Research and Education (Deemed to be University), Virudhunagar, India

Abstract

Herein, synthesis of a series of naphtho[2,3-f]quinolin-13-one and naphtho[2,3-a]acridin-1(2H)-one derivatives directly by one-pot multi-component reaction of 1,3-dicarbonyl compounds (1,3-indanedione/1,3-cyclohexanedione), 2-aminoantharacene/2-naphthylamine and various substituted aldehydes under solvent-free conditions using heteropoly-11-molybdo-1-vanadophosphoric acid supported on montmorillonite K-10 clay catalyst (10% PVMoK-10) is reported. The successful formation of naphtho[2,3-f]quinolin-13-one and naphtho[2,3-a]acridin-1(2H)-one derivatives was confirmed by various spectroscopic techniques. This study offers a green approach for the synthesis of novel quinolinone derivatives. © 2019, © 2019 Taylor & Francis Group, LLC.

Author keywords

1,3-Dicarbonyl compounds | heteropoly acid | montmorillonite K-10 clay | naphtho[2,3-a]acridin-1(2H)-one | naphtho[2,3-f]quinolin-13-one

Indexed keywords

EMTREE drug terms: 1,3 cyclohexanedione | 1,3 indandione derivative | 2 aminoanthracene | 2 naphthylamine | acridine | aldehyde derivative | hexane | montmorillonite | naphtho[2,3 a]acridin 1(2h) one derivative | naphtho[2,3 f]quinolin 13 one | phosphoric acid derivative | quinoline derivative | unclassified drug

EMTREE medical terms: Article | catalysis | catalyst | green chemistry | mass spectrometry | one pot synthesis | polymerization | reaction analysis

Chemicals and CAS Registry Numbers:

2 aminoanthracene, 613-13-8; 2 naphthylamine, 91-59-8; acridine, 260-94-6; hexane, 110-54-3; montmorillonite, 1318-93-0, 61029-13-8

Funding details

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Sami, P.; Department of Chemistry, V.H.N.S.N. College (Autonomous), 3/151-1, College Road, Virudhunagar, India;

Document details - Green Synthesis of Silver Nanoparticles and Their Effective Utilization in Fabricating Functional Surface for Antibacterial Activity Against Multi-Drug Resistant Proteus mirabilis

Journal of Cluster Science

Volume 30, Issue 6, 1 November 2019, Pages 1403-1414

Green Synthesis of Silver Nanoparticles and Their Effective Utilization in Fabricating Functional Surface for Antibacterial Activity Against Multi-Drug Resistant Proteus mirabilis(Article)

Maniraj, A., Kannan, M., Rajarathinam, K., Vivekanandhan, S., Muthuramkumar, S.

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[b]Department of Zoology, V.H.N.S.N. College (Autonomous), Virudhunagar, Tamil Nadu 626001, India
[c]Sustainalbe Materials and Nanotechnology Lab, Department of Physics, V.H.N.S.N. College (Autonomous), Virudhunagar, Tamil Nadu 626001, India

Abstract

A simple and rapid synthesis of silver nanoparticles was achieved using the aqueous extract of Ficus benghalensis leaf as both reducing and stabilizing agents. Reaction kinetics of the bioreduction process was investigated to understand the effects of various parameters such as silver ion concentrations, volume of leaf extract, pH of the reaction mixture and reaction duration. The biosynthesized silver nanoparticles were characterized by employing various techniques such as Ultraviolet visible spectroscopy, Fourier transform infrared spectroscopy, X-ray diffraction, dynamic light scattering, scanning electron microscopy and transmission electron microscopy. The obtained silver nanoparticles showed face-centered cubic phase and found to have the spherical shape with an average size of 28.69 nm as respectively observed from XRD and TEM analysis. The biogenic silver nanoparticles showed excellent antimicrobial activity against the multi-drug resistant pathogens such as Escherichia coli, Pseudomonas aeruginosa, Klebsiella pneumoniae, Proteus mirabilis and Staphylococcus aureus, which is comparable with the standard broad spectrum antibiotic streptomycin. Further, the biosynthesized silver nanoparticles were explored for the functionalization of glass slide without using any binding agents, which showed the strong resistance against the growth of biofilm forming Proteus mirabilis.

Author keywords

Antibacterial activity | Biosynthesis | Functional surface | Silver nanoparticles

Funding details

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Department of Science and Technology, Ministry of Science and Technology, India See opportunities by डीएसटी		डीएसटी
University Grants Commission	39-409/2010,Lr.No.F.42-485/2013	UGC

Funding text

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Muthuramkumar, S.; Department of Botany, V.H.N.S.N. College (Autonomous), Virudhunagar, Tamil Nadu, India;

Document details - In Situ Synthesis, Characterization, and Catalytic Performance of Polypyrrole Polymer-Incorporated Ag₂MoO₄ Nanocomposite for Detection and Degradation of Environmental Pollutants and Pharmaceutical Drugs

ACS Applied Materials and Interfaces

Volume 11, Issue 41, 16 October 2019, Pages 38321-38335

In Situ Synthesis, Characterization, and Catalytic Performance of Polypyrrole Polymer-Incorporated Ag_2MoO_4 Nanocomposite for Detection and Degradation of Environmental Pollutants and Pharmaceutical Drugs(Article)

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[b]Electroanalysis and Bioelectrochemistry Lab, Department of Chemical Engineering and Biotechnology, National Taipei University of Technology, No. 1, Section 3, Chung-Hsiao East Road, Taipei, 106, Taiwan

Abstract

Material combinations of semiconductor with conducting polymer are gaining growing interest due to their enhanced activities in photocatalysis as well as electrochemical sensing. In this present work, we report a facile in situ synthesis of polypyrrole (PPy) polymer-incorporated silver molybdate (Ag_2MoO_4) nanocomposite that is utilized as a photocatalyst and electrocatalyst for the degradation of pollutant heavy metals, namely, methylene blue (MB) and heavy metal (Cr(VI)), and ciprofloxacin (CIP) and for detection of the drug, azomycin. The synthesized nanocomposite was characterized by various theoretical, spectral, and microscopic studies. Matching of the powder X-ray diffraction pattern with JCPDS no. 76-1747 confirmed the formation of α-Ag_2MoO_4/PPy. The surface topography and spherical morphology of the nanocomposite were studied using field emission-scanning electron microscopy and transmission electron microscopy. Fourier transform infrared spectral detail expounds the smooth incorporation of PPy to Ag_2MoO_4. The as-synthesized nanocomposite performs as an efficient photocatalyst in the degradation of MB (99.9%), Cr(VI) (99%), and CIP drug (99.8%) within 10 min. In addition to this, the Ag_2MoO_4/PPy-modified glassy carbon electrode (GCE) demonstrated excellent electrocatalytic activity in terms of a higher cathodic peak current and lower peak potential when compared with other modified and unmodified GCEs for the detection of azomycin. The Ag_2MoO_4/PPy/GCE displayed a broader linear response range and lower detection limit of 0.5-499 μM and 65 nM, respectively. Moreover, other potentially co-interfering compounds, such as a similar functional group-containing biological substances and inorganic species, have no interference effect toward azomycin sensing. Copyright © 2019 American Chemical Society.

Author keywords

Ag_2MoO_4/PPy | azomycin | CIP | Cr(VI) | electrochemical sensing | in situ synthesis | MB | short-term degradation

Indexed keywords

Engineering controlled terms: Aromatic compounds | Conducting polymers | Electrocatalysts | Electrochemical sensors | Field emission microscopes | Glass membrane electrodes | Heavy metals | High resolution transmission electron microscopy | Nanocomposites | Pollution detection | Polypyrroles | Scanning electron microscopy | Silver compounds | Topography

Engineering uncontrolled terms: Ag2MoO4/PPy | azomycin | Electrochemical sensing | In-situ synthesis | Short term

Engineering main heading: Chromium compounds

EMTREE drug terms: 2 nitroimidazole; ciprofloxacin; methylene blue; molybdenum; molybdic acid; nanocomposite; nitroimidazole derivative; polymer; polypyrrole; pyrrole derivative; silver

EMTREE medical terms: catalysis; chemistry; pollutant

MeSH: Catalysis; Ciprofloxacin; Environmental Pollutants; Methylene Blue; Molybdenum; Nanocomposites; Nitroimidazoles; Polymers; Pyrroles; Silver

Topic:

Prominence percentile:

Chemicals and CAS Registry Numbers:

2 nitroimidazole, 527-73-1; ciprofloxacin, 85721-33-1; methylene blue, 61-73-4; molybdenum, 7439-98-7; molybdic acid, 11116-47-5, 14259-85-9, 7782-91-4; polypyrrole, 30604-81-0; silver, 7440-22-4;

azomycin; Ciprofloxacin; Environmental Pollutants; Methylene Blue; molybdate; Molybdenum; Nitroimidazoles; Polymers; polypyrrole; Pyrroles; Silver

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Publisher: American Chemical Society

Chen, S.-M.; Electroanalysis and Bioelectrochemistry Lab, Department of Chemical Engineering and Biotechnology, National Taipei University of Technology, No. 1, Section 3, Chung-Hsiao East Road, Taipei, Taiwan;

Document details - Hydrothermal synthesis, characterization and seed germination effects of green-emitting graphene oxide-carbon dot composite using brown macroalgal bio-oil as precursor

Journal of Chemical Technology and Biotechnology

Volume 94, Issue 10, 1 October 2019, Pages 3269-3275

Hydrothermal synthesis, characterization and seed germination effects of green-emitting graphene oxide-carbon dot composite using brown macroalgal bio-oil as precursor(Article)

Sankaranarayanan, S., Vishnukumar, P., Hariram, M., Vivekanandhan, S., Camus, C., Buschmann, A.H., Navia, R.

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[c]Department of Physics, Bharathidasan University, Tiruchirappalli, India

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Abstract

BACKGROUND: Bio-oils can be effectively used for the preparation of bio-based materials owing to their chemical compositions. In this study, brown macroalgal-derived bio-oil was used for the synthesis of graphene oxide-carbon dot composite by a simple hydrothermal process. RESULTS: A simple and facile hydrothermal process was explored for the preparation of green-emitting graphene oxide-carbon dot (GO-CD) composite from brown macroalgal biomass-derived bio-oil as carbon source in water medium at 170 °C for 4 h. An aqueous solution of the prepared GO-CD composite exhibited green emission under ultraviolet (UV) radiation exposure. Raman spectroscopy and transmission electron microscopy analyses confirmed the successful formation of GO-CD composite. Physicochemical characterizations such as phase structure and optical properties of the GO-CD were investigated by X-ray diffraction, UV–visible and photoluminescence analyses. The effects of the GO-CD composite on the seed germination of mung bean were studied. It was found that, compared with the control (100/0 vol% water; total length of plant ~20 cm), the 75/25 vol% water/GO-CD ratio treatment resulted in better plant growth (total length of plant ~25 cm) under the studied conditions. Further increase in GO-CD concentration above the optimum level resulted in a decrease in plant growth but did not have a significant effect on the mass, root and leaf mass development. CONCLUSION: Brown macroalgal bio-oil-derived graphene oxide-carbon dot composite were explored for the seed germination of mung bean and the results showed that a low concentration enhanced the plant growth. © 2019 Society of Chemical Industry. © 2019 Society of Chemical Industry

Author keywords

bio-oil | brown macroalgal | graphene oxide-carbon dot (GO-CD) composite | green emission | hydrothermal | seed germination

Indexed keywords

Engineering controlled terms: Chemical industry | Cultivation | Graphene | High resolution transmission electron microscopy | Optical properties | Phase structure | Physicochemical properties | Plant life extension | Seed | Water treatment

Engineering uncontrolled terms: Bio oil | brown macroalgal | Green emissions | hydrothermal | Seed germination

Engineering main heading: Hydrothermal synthesis

EMTREE drug terms: biooil | carbon nanoparticle | graphene oxide | nanocomposite | oil | unclassified drug | water

EMTREE medical terms: aqueous solution | Article | biomass | brown alga | carbon source | concentration (parameter) | controlled study | germination | macroalga | microbial biomass | mung bean | nonhuman | photoluminescence | physical chemistry | plant growth | plant leaf | plant root | precursor | radiation exposure | Raman spectrometry | synthesis | transmission electron microscopy | X ray diffraction

Chemicals and CAS Registry Numbers:

water, 7732-18-5

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Vivekanandhan, S.; Sustainable Materials and Nanotechnology Lab (SMNL), Department of Physics, V.H.N.S.N. College (Autonomous), Virudhunagar, India;

Document details - Physical properties of rare earth metal (Gd³⁺) doped SnO₂ thin films prepared by simplified spray pyrolysis technique using nebulizer

Optik

Volume 194, October 2019, Article number 162887

Physical properties of rare earth metal (Gd^{3+}) doped SnO_2 thin films prepared by simplified spray pyrolysis technique using nebulizer(Article)

S., P., J., R.M., K., D.A.K., P.S., S.K., S., P., L., A.

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Abstract

Pristine and rare earth (i.e) gadolinium doped SnO_2 thin films have been coated on micro-glass substrates with different Gd doping concentration at constant temperature 450 °C by simplified spray pyrolysis technique using nebulizer unit. The variation of doping concentration from 0 to 6 wt.% in the steps of 2 wt.%. Structural, optical, electrical, morphological and photoluminescence properties had been examined as a function of gadolinium doping level. The X-ray diffraction study exposed that all the prepared pristine and Gd doped SnO_2 thin films are (110) preferred orientation with tetragonal crystal structure. The observed transmittance of Gd:SnO_2 thin film varies between 91–80% in the visible regions. The estimated optical band gap value was initially decreased from 3.79 to 3.74 eV and then it was slightly increased as 3.77 eV with respect to the increase of Gd doping concentrations. Homogeneous surface morphology with polyhedrons like grains without cracks for all the prepared samples was illustrated by SEM studies. EDS spectra confirms that the existence of Sn, O and Gd elements in the 4% Gd doped SnO_2 thin film surface. PL results indicates that three emission bands such as ultra violet, blue and green emission peaks at the wavelength of 360, 493 and 519 nm respectively, for all the prepared Gd:SnO_2 films. Minimum resistivity (ρ) 7.14×10^{-4} Ω-cm with activation energy (E_a) 0.05 eV, maximum carrier concentration (n) 2.36×10^{20} cm^{-3} and figure of merit (ϕ) 52.96×10^{-3} $(\Omega/sq)^{-1}$ were obtained for 4% Gd doped SnO_2 thin film using Hall effect measurements.

Author keywords

Electrical properties | Nebulized spray pyrolysis | Optical | Photoluminescence | SnO_2

Indexed keywords

Engineering controlled terms: Activation energy | Carrier concentration | Crystal orientation | Electric properties | Energy gap | Film preparation | Gadolinium | Morphology | Photoluminescence | Rare earths | Semiconductor doping | Spray pyrolysis | Substrates | Surface morphology

Engineering uncontrolled terms: Activation energies (Ea) | Nebulized spray pyrolysis | Optical | Photoluminescence properties | SnO2 | Spray-pyrolysis techniques | Tetragonal crystal structure | X-ray diffraction studies

Engineering main heading: Thin films

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L., A.; Research Department of Physics, V.H.N.S.N. College, Virudhunagar, Tamilnadu, India;

Document details - Fabrication, spectral characterization, XRD and SEM studies on some organic acids doped polyaniline thin films on glass substrate

Journal of King Saud University - Science

Volume 31, Issue 4, October 2019, Pages 1290-1296

Fabrication, spectral characterization, XRD and SEM studies on some organic acids doped polyaniline thin films on glass substrate(Article)(Open Access)

Reka Devi, M., Saranya, A., Pandiarajan, J., Dharmaraja, J., Prithivikumaran, N., Jeyakumaran, N.

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[b]Nanoscience Research Lab, Department of Physics, VHNSN College (Autonomous), Virudhunagar 626 001, Tamil Nadu, India
[c]Division of Chemistry, Faculty of Science and Humanities, Sree Sowdambika College of Engineering, Chettikurichi, Aruppukottai 626 134, Tamil Nadu, India

Abstract

Recently, the applications of conducting polymers are widely used in vast areas, due to their low cost, light weight, flexibility and the ability to deposit on various substrates. Among these, polyaniline (PANI) is the most important conducting polymers because of its environmental stability, easy way to fabricate and its cost-effectivity. In this paper, synthesis of conducting material namely, polyaniline thin film was carried out with different organic acids as dopents viz oxalic, benzoic and salicylic acids by dip coating method on a glass substrate with various dipping time (3, 6, 12 and 24 h) in the presence of ammonium peroxydisulphate (oxidant). The synthesized PANI thin films were structurally characterized by various physico–chemical and spectral methods (UV–visible spectra, Photoluminescence, XRD and SEM). Oxalic acid doped PANI thin film compounds show better transparency with low band gap value than other compounds and also the observed band gap energy values decrease with rise in dipping time. The superior photoluminescence emission wavelengths were observed in oxalic acid doped PANI thin film at 24 h that illustrates that the thin films have good photoluminescence as well as electroluminescence in nature. The conductivity nature of oxalic acid doped PANI thin film shows higher values at 24 h dipping time than other compounds. Further, the XRD and SEM analyses reports show that the oxalic acid doped PANI thin film compounds have high crystalline nature with homogeneous surface morphology. © 2018 The Authors

Author keywords

Conducting PANI thin film | Electrical properties | Glass substrate | Organic acid dopents | Spectral characterization | XRD studies

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Jeyakumaran, N.; Nanoscience Research Lab, Department of Physics, VHNSN College (Autonomous), Virudhunagar 626 001, Tamil Nadu, India;

Prominence percentile:

Document details - Rational design and facile synthesis of binary metal sulfides VS₂-SnS₂ hybrid with functionalized multiwalled carbon nanotube for the selective detection of neurotransmitter dopamine

Analytica Chimica Acta

Volume 1071, 13 September 2019, Pages 98-108

Rational design and facile synthesis of binary metal sulfides VS_2-SnS_2 hybrid with functionalized multiwalled carbon nanotube for the selective detection of neurotransmitter dopamine(Article)

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[b]Department of Chemical Engineering, National Taiwan University, Taiwan
[c]Department of Chemistry, VHNSN College, Virudhunagar, Tamil Nadu 626001, India

View additional affiliations

Abstract

In this work, we report a sensitive and selective electrochemical sensor for the detection of dopamine (DA) neurotransmitter based on VS_2-SnS_2/f-MWCNT hybrids. Herein, the binary metal sulfide (VS_2-SnS_2) was synthesized via single step hydrothermal route and hybrids with f-MWCNT via the ultrasonication process. The as-prepared VS_2-SnS_2/f-MWCNT hybrids were characterized through the FESEM, EDX and elemental mapping, TEM, XPS, Raman and XRD techniques. The electrochemical performance and catalytic activity of the modified electrodes were probed using electrochemical impedance spectra (EIS), cyclic voltammetry (CV) and differential pulse voltammetry (DPV). Interestingly, DPV results exhibits an appreciable linear range from 0.025 to 1017 μM and LOD of 0.008 μM. The selectivity study was performed to prove the high selectivity of the VS_2-SnS_2/f-MWCNT hybrids modified electrode. Furthermore, the practical applicability of the DA sensor was scrutinized in human serum sample and rat brain sample.

Author keywords

Binary metal sulfides | Dopamine | Functionalized multiwalled carbon nanotube | Hydrothermal synthesis | Vanadium disulfide

Indexed keywords

Engineering controlled terms: Amines | Carbon disulfide | Catalyst activity | Cyclic voltammetry | Electrochemical electrodes | Electrochemical sensors | Hydrothermal synthesis | IV-VI semiconductors | Nanotubes | Neurophysiology | Semiconducting tin compounds | Tin compounds | Vanadium compounds | Yarn

Engineering uncontrolled terms: Binary metals | Differential pulse voltammetry | Dopamine | Electrochemical impedance spectra | Electrochemical performance | Functionalized multi-walled carbon nanotubes | Hydrothermal routes | Vanadium disulfides

Engineering main heading: Multiwalled carbon nanotubes (MWCN)

Prominence percentile:

EMTREE drug terms: dopamine, multi walled nanotube, sulfide, tin, tin sulfide, unclassified drug, vanadium derivative, vanadium sulfide, agents interacting with transmitter, hormone or drug receptors, carbon nanotube, dopamine, sulfide, tin, tin derivative, tin sulfide, vanadium, vanadium derivative, vanadium disulfide

EMTREE medical terms: animal tissue, Article, catalysis, chemical analysis, chemical structure, controlled study, cyclic potentiometry, differential pulse voltammetry, electrochemistry, elemental analysis, human, impedance spectroscopy, limit of detection, nonhuman, pH, priority journal, Raman spectrometry, rat, surface property, synthesis, transmission electron microscopy, ultrasound assisted extraction, X ray diffraction, X ray photoemission spectroscopy, animal, blood, brain chemistry, chemistry, devices, electrochemical analysis, electrode, procedures, reproducibility, synthesis

MeSH: Animals, Brain Chemistry, Dopamine, Electrochemical Techniques, Electrodes, Humans, Hydrogen-Ion Concentration, Limit of Detection, Nanotubes, Carbon, Neurotransmitter Agents, Rats, Reproducibility of Results, Sulfides, Tin, Tin Compounds, Vanadium, Vanadium Compounds

Chemicals and CAS Registry Numbers:

dopamine, 51-61-6, 62-31-7; sulfide, 18496-25-8; tin, 14314-35-3, 7440-31-5; vanadium, 7440-62-2;

Dopamine; Nanotubes, Carbon; Neurotransmitter Agents; Sulfides; Tin; Tin Compounds; tin sulfide; Vanadium; Vanadium Compounds; vanadium disulfide

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Chen, S.-M.; Department of Chemical Engineering and Biotechnology, National Taipei University of Technology, Taipei, Taiwan;

Document details - Tecoma stans flower extract assisted biogenic synthesis of functional Ag-Talc nanostructures for antimicrobial applications

Bioresource Technology Reports

Volume 7, September 2019, Article number 100298

Tecoma stans flower extract assisted biogenic synthesis of functional Ag-Talc nanostructures for antimicrobial applications(Article)

Hariram, M., Vivekanandhan, S., Ganesan, V., Muthuramkumar, S., Rodriguez-uribe, A., Mohanty, A.K., Misra, M.

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Abstract

Silver based functional nanomaterials receive increasing importance with the application potential for antimicrobial products. Among the various synthesis processes, plant extract mediated biosynthesis of functional nanostructures receives great attention due to their greener approach. In this perspective, the present investigation deals with the effective functionalization of talc with silver nanoparticles by employing Tecoma stans flower extract as the reducing/capping agent. The Ag-Talc nanostructure formation was confirmed using UV–Vis spectroscopy (characteristic peak at 440 nm) and X-ray diffraction (XRD) analysis (FCC Ag peak at 38°) with the crystallite size of ~57 nm. SEM-EDX analysis ensured the silver content of 0.52 wt% in talc. TEM images reveal the mean diameter of the Ag nanoparticles, which were found 50–60 nm. The synthesized Ag functionalized talc exhibits good antimicrobial activity against Staphylococcus aureus and Escherichia coli with the inhibition zone of 24 mm and 16 mm respectively.

Author keywords

Antimicrobial activity | Bioreduction | Flower extract | Silver nanoparticles | Talc

Indexed keywords

Engineering controlled terms: Biochemistry | Crystallite size | Escherichia coli | Metal nanoparticles | Plant extracts | Silver metallography | Talc | X ray diffraction analysis

Engineering uncontrolled terms: Anti-microbial activity | Antimicrobial products | Bio reductions | Characteristic peaks | Flower extracts | Functional Nano materials | Functional nanostructures | Nanostructure formation

Engineering main heading: Silver nanoparticles

EMTREE drug terms: antiinfective agent | flower extract | silver nanoparticle | talc | Tecoma stans extract | unclassified drug

EMTREE medical terms: antimicrobial activity | Article | controlled study | drug synthesis | Escherichia coli | flower | nonhuman | priority journal | scanning electron microscopy | Staphylococcus aureus | Tecoma stans | ultraviolet visible spectroscopy | X ray diffraction

Chemicals and CAS Registry Numbers:

talc, 14807-96-6

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Vivekanandhan, S.; Sustainable Materials and Nanotechnology Lab, Department of Physics, V.H.N.S.N. College (Autonomous), Virudhunagar, Tamil Nadu, India;

Document details - Design of novel solar-light driven sponge-like Fe₂V₄O₁₃ photocatalyst: A unique platform for the photoreduction of carcinogenic hexavalent chromium

Solar Energy

Volume 188, August 2019, Pages 849-856

Design of novel solar-light driven sponge-like $Fe_2V_4O_{13}$ photocatalyst: A unique platform for the photoreduction of carcinogenic hexavalent chromium(Article)

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Abstract

In past days, the occurrence of toxic heavy metal ions into the water and soil environment causes a major health risk to the living organisms. In this work, we mainly focused on the photoreduction of hexavalent chromium (Cr^{6+}) using novel sponge-like $Fe_2V_4O_{13}$ photocatalyst under visible light irradiation. The sponge-like $Fe_2V_4O_{13}$ was tailored through hydrothermal process using ferric chloride and sodium metavanadate precursors without the addition of any templates. The surface morphology, elemental analysis and various physical properties are characterized by numerous spectroscopic techniques. Interestingly, the sponge-like $Fe_2V_4O_{13}$ demonstrated proficient photocatalytic performances towards the reduction of Cr^{6+} into Cr^{3+}. The obtained UV–visible spectroscopy results portrayed that sponge-like $Fe_2V_4O_{13}$ could reduce above of Cr^{6+} solution within 40 min. The effect of operational reaction parameters such as catalyst dosage, initial Cr^{6+} concentration and pH of the solution was optimized. Moreover, the sponge-like $Fe_2V_4O_{13}$ holds very good stability even after five consecutive cycles. This study could open new insights for the design novel nanostructured binary metal oxides for environmental applications.

Author keywords

Binary metal oxide | Hexavalent chromium | Photocatalyst | Solar light

Indexed keywords

Engineering controlled terms: Biology | Chlorination | Chlorine compounds | Chromium compounds | Health risks | Heavy metals | Iron compounds | Light | Metal ions | Morphology | Photocatalysts | Spectroscopic analysis | Surface morphology

Engineering uncontrolled terms: Binary metal oxides | Environmental applications | Hexavalent chromium | Photocatalytic performance | Solar light | Spectroscopic technique | Visible spectroscopy | Visible-light irradiation

Engineering main heading: Vanadium compounds

GEOBASE Subject Index: catalyst | chromium | design method | heavy metal | hydrothermal activity | oxide | reduction | solar activity | solar power

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Muthuraj, V.; Department of Chemistry, V. H. N. Senthikumara Nadar College (Autonomous), Virudhunagar, Tamil Nadu, India;

Document details - A novel n-CeO₂/n-CdO heterojunction nanocomposite for enhanced photodegradation of organic pollutants under visible light irradiation

Journal of Rare Earths

Volume 37, Issue 8, August 2019, Pages 853-860

A novel n-CeO_2/n-CdO heterojunction nanocomposite for enhanced photodegradation of organic pollutants under visible light irradiation(Article)

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Abstract

In this study, a series of novel visible light driven n-CeO_2/n-CdO heterojunction (CeO_2/CdO) nanocomposites were successfully fabricated by simple ultrasonication method. Several characterization tools including X-ray diffraction (XRD), scanning electron microscopy (SEM), transmission electron microscopy (TEM) and UV-vis diffuse reflectance spectroscopy (UV-DRS), etc., were utilized to investigate the physicochemical properties of the catalyst and confirm the formation of heterojunction. Under visible light irradiations, the photocatalytic activities of the as-prepared CeO_2/CdO nanocomposites were evaluated by degrading of Congo red (CR) and Rhodamine B (RhB) solutions. As a result, the CeO_2/CdO (mass percentage ratio 1:3) nanocomposite displays remarkable performance for CR and RhB degradation. The enhancement in the photocatalytic performance of CeO_2/CdO (1:3) nanocomposite can be attributed not only to the strong visible-light absorption region, separating the photogenerated electron-hole pairs but also to the formation of n-n type heterojunction. The results also indicate that the CeO_2/CdO (1:3) nanocomposite has good stabilization and high reusability. In addition, the mechanism is proposed for the coupled semiconductors and possible reasons for the enhancement of visible-light photocatalytic efficiency are also discussed. This work can provide a new gateway to fabricate visible photocatalysts and promising candidate catalysts for poisonous wastewater treatment in the near future.

Author keywords

Heterojunction | n-CeO_2/n-CdO | Photocatalysis | Photodegradation | Rare earths | Visible light

Indexed keywords

Engineering controlled terms: Azo dyes | Cerium oxide | Dyes | Heterojunctions | High resolution transmission electron microscopy | Irradiation | Light absorption | Nanocomposites | Organic pollutants | Photocatalysis | Photocatalysts | Photocatalytic activity | Photodegradation | Physicochemical properties | Rare earths | Reusability | Rhodium compounds | Scanning electron microscopy | Wastewater treatment

Engineering uncontrolled terms: Characterization tools | Photocatalytic efficiency | Photocatalytic performance | Photogenerated electrons | UV-Vis diffuse reflectance spectroscopy | Visible light | Visible light absorption | Visible-light irradiation

Engineering main heading: Light

Funding details

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Muthuraj, V.; Department of Chemistry, V.H.N.S.N College, Virudhunagar, Tamilnadu, India;

Document details - Influence of Carrier Gas Pressure on the Physical Properties of CdO Thin Films

Zeitschrift fur Physikalische Chemie

Volume 233, Issue 7, 26 July 2019, Pages 913-932

Influence of Carrier Gas Pressure on the Physical Properties of CdO Thin Films(Article)

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View additional affiliations

Abstract

Conducting cadmium oxide (CdO) thin film samples were deposited on amorphous glass substrates at the optimized substrate temperature (200 °C) as a function of carrier gas pressure (10.8, 12.7, 14.7, 16.7 and 18.6 × 10^4 N m^{-2} respectively) by spray pyrolysis technique using nebulizer. XRD results showed that all the CdO thin films were polycrystalline in nature along with cubic structure. The scanning electron microscopy (SEM) images revealed that all the thin films had a sphere like grains without any cracks. The elemental composition of the film is analyzed with EDAX spectrum formed in stochiometric range. Direct energy gap values were found to be had decreased from 2.46 to 2.42 eV as the function of carrier gas pressure had increased from 10.8 to 14.7 × 10^4 (N m^{-2}) and the energy gap increased further. All the as deposited samples of Cd-O vibration bond (690 cm^{-1}) were confirmed by FTIR spectrum. PL emission spectra revealed that all the CdO thin films exhibit a strong emission (green) peak at 520 nm. High carrier concentration (2.88 × 10^{19} cm^{-3}), low resistivity (4.76 × 10^{-3} ω cm) and high figure of merit (25.0 × 10^{-3}) were observed for 14.7 × 10^4 (N m^{-2}) carrier gas pressure of CdO thin film.

Author keywords

CdO | electrical properties | nebulized spray pyrolysis | optical properties | thin film

Indexed keywords

Engineering controlled terms: Carrier concentration | Electric properties | Emission spectroscopy | Energy gap | Fourier transform infrared spectroscopy | Optical properties | Scanning electron microscopy | Spray pyrolysis | Substrates | Thin films

Engineering uncontrolled terms: Direct energy gaps | Elemental compositions | Figure of merits | Low resistivity | Nebulized spray pyrolysis | Scanning electron microscopy image | Spray-pyrolysis techniques | Substrate temperature

Engineering main heading: Cadmium compounds

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Publisher: De Gruyter Open Ltd

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Document details - Combustion Process Using Plant-Based Fuels for the Synthesis of Metal- Oxide Nanostructures

ChemistrySelect

Volume 4, Issue 27, 23 July 2019, Pages 8026-8042

Combustion Process Using Plant-Based Fuels for the Synthesis of Metal- Oxide Nanostructures(Review)

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Abstract

Metal oxide nanostructures receive great interest due to their unique size and shape dependent physicochemical and functional properties. With the rapid growth of metal oxide nanotechnology, their chemical synthesis processes have become the most promising one due to their simplicity and versatility. Among the various available chemical processes such as sol-gel, hydrothermal, polyol and precipitation, the combustion process receives significant attention. In particular, the combustion process has been extensively explored for the synthesis of various nanostructured materials including metal oxides, which involves in the exothermic reaction upon thermal heating of precursor chemicals. Recently, the combustion process has been reinvented by using the various renewable resource-based organic fuels, which receives increasing interest among global researchers. A wide range of plant/ leaf, fruit, flower, seed, peel, latex and tuber extracts along with the plant-derived products have been explored in combustion process for the synthesis of various metal oxides. Hence, the present review is aimed to focus the recent advances in the combustion process by using renewable fuels for the synthesis of metal oxide nanostructures and also the emerging opportunities. © 2019 Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim

Author keywords

Bio-fuel | Combustion Process | Metal Oxides | Nanoparticles | Powders

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Document details - Quantum chemical studies and spectroscopic investigations on 22-amino-3-methyl-5-nitropyridine by density functional theory

Heliyon

Volume 5, Issue 7, July 2019, Article number e02149

Quantum chemical studies and spectroscopic investigations on 22-amino-3-methyl-5-nitropyridine by density functional theory(Article)(Open Access)

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Abstract

Quantum chemical calculations on energy and molecular structure of 2-amino-3-methyl-5-nitropyridine (2A3M5NP) have been attempted by implementing DFT/B3LYP method using 6-311G (d,p), 6-311G++ (d,p) and cc-pVTZ basis sets. The optimized geometry and the vibrational analysis for energetically most stable configuration, are carried out theoretically by using B3LYP/cc-pVTZ basis set. The computed vibrational frequencies were scaled by using scaling factors and compared with the experimental Fourier Transform Infra-Red (FTIR) solid phase spectrum in the region 4000-400 cm^{-1} and FT-Raman spectrum in the region 4000-100 cm^{-1}. The complete vibrational assignments, analysis and correlation of fundamental modes of the compound have been carried out using the potential energy distribution (PED). The intramolecular charge transfer, hyperconjugative interaction of the compound is investigated from natural bonding orbital (NBO) analysis. The UV-Visible spectrum of 2A3M5NP was obtained with ethanol as a solvent. The electronic properties such as HOMO (Highest Occupied Molecular Orbital) and LUMO (Lowest Unoccupied Molecular Orbital) energies are determined by B3LYP/cc-pVTZ basis set. The electronic absorption spectrum of the compound was studied from UV-Visible analysis by using time-dependent density functional theory (TD-DFT). The electron density distribution and chemical reactive sites of 2A3M5NP were analyzed from molecular electrostatic potential (MEP) analysis and frontier molecular orbital (FMO) analysis. © 2019

Author keywords

Materials chemistry | Molecular physics | Theoretical chemistry

Funding details

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Indian Institute of Technology Madras		IITM
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Jose, S.P.; Department of Computational Physics, School of Physics, Madurai Kamaraj University, Madurai, Tamil Nadu, India;

Document details - Synthesis of coumarin derivatives and its Ru(II) complexes encompassing pyrazole ring as a potent antidiabetic agents – A biochemical perspective

Inorganica Chimica Acta

Volume 492, 24 June 2019, Pages 48-59

Synthesis of coumarin derivatives and its Ru(II) complexes encompassing pyrazole ring as a potent antidiabetic agents – A biochemical perspective(Article)

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Abstract

A series of two new organoruthenium complexes have been synthesized incorporated by 4-chloro-3-formyl coumarin with 4-aminoantipyrine and morpholine respectively. The ligands (CumAP and MorcumAP) were synthesized through the new route like substitution as well as condensation method. Spectral and analytical techniques such as elemental analysis, IR, UV–vis, 1H NMR and 13C NMR and XRD provided proof of the formation of the ligands and complexes. To evaluate the antidiabetic activity of synthesized ligands and their Ru(II) complexes were subjected in both in vivo and inslico approach. The results indicated that the supplementation with MorcumAP, CumAP and $(CumAP)_2Ru(II)$ complex to diabetic-induced group, activities of superoxide dismutase, catalase and glutathione peroxidase were found to be nearer to control. LPO (Lipid peroxidation) levels were analyzed in serum, liver and kidney of mice. On comparing with organic moiety ruthenium complex shows enhanced effectiveness towards anti diabetic cells. In silico studies also support the experimental results. Overall the results of revealed that the element Ru which enhance the druggability properties of the coumarin derivatives. © 2019 Elsevier B.V.

Author keywords

4-Aminoantipyrine | 4-Chlorocoumarin aldehyde | Anti diabetic agents | Histopathology | LPO | Morpholine

Indexed keywords

Engineering controlled terms: Enzymes | Ligands | Mammals | Synthesis (chemical)

Engineering uncontrolled terms: 4-aminoantipyrine | Anti diabetics | Antidiabetic activity | Coumarin derivatives | Glutathione peroxidase | Histopathology | Morpholines | Super oxide dismutase

Engineering main heading: Ruthenium compounds

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Topic:

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Document details - Neem (Azadirachta indica) gum assisted sol–gel synthesis and characterization of ZnO nanoparticles for photocatalytic application

Journal of the Australian Ceramic Society

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Neem (Azadirachta indica) gum assisted sol–gel synthesis and characterization of ZnO nanoparticles for photocatalytic application(Article)

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Abstract

Neem (Azadirachta indica) gum-assisted sol–gel process was newly explored for the synthesis of ZnO nanoparticles. Neem gum plays a vital role as an effective chelating agent for Zn^{2+} ions, which enables the uniform distribution of metal ions throughout the gum matrix, which was identified by FTIR and SEM-EDX analysis. Thermal decomposition of the dried gel results in the formation of ultrafine ZnO nanoparticles as low as 450 °C. FTIR and XRD analyses confirm the formation of phase pure ZnO nanoparticles without any organic residues. TEM investigation identified the formation of poly-dispersed ZnO nanoparticles with the size range between 30 and 110 nm. Its optical activity was analyzed employing UV–Vis and PL studies. The synthesized ZnO nanoparticles showed excellent photocatalytic performance in degrading trypan blue organic dye under the exposure of UV radiation and ~ 97% of the trypan blue was degraded in 180 min. © 2018, Australian Ceramic Society.

Author keywords

Azadirachta indica gum | Combustion synthesis | Photo catalysis | ZnO nanoparticles

Indexed keywords

Engineering controlled terms: Chelation | Combustion synthesis | Decomposition | II-VI semiconductors | Metal ions | Metal nanoparticles | Metals | Sols | Synthesis (chemical) | Zinc oxide

Engineering uncontrolled terms: Azadirachta indica | Chelating agent | Optical activity | Organic residues | Photocatalytic application | Photocatalytic performance | SEM-EDX analysis | Uniform distribution

Engineering main heading: ZnO nanoparticles

Funding details

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Document details - Non split hop domination number for some mirror graphs and cartesian product of two distinct paths

Journal of Analysis

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Non split hop domination number for some mirror graphs and cartesian product of two distinct paths(Article)

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Abstract

In a graph G= (V, E) let S be the subset of V. A set S⊆ V is a hop dominating set of G, if for every vertex v∈ V- S there exists u∈ S such that d(u,v) = 2. A set S⊆ V is a non split hop dominating set of G if S is a hop dominating set and ⟨ V- S⟩ is connected. The minimum cardinality of non split hop dominating set is called non split hop domination number of G and it is denoted by NSHD(G). In this paper we found NSHD number for some mirror graphs and cartesian product of two distinct paths. © 2018, Forum D'Analystes, Chennai.

Author keywords

Cartesian product | Hop domination | Mirror graph | Non split hop domination

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Mahadevan, G.; The Gandhigram Rural Institute (Deemed to be University), Gandhigram, Tamil Nadu, India;

Document details - Influence of fluorine doped CdO thin films by an simplified spray pyrolysis technique using nebulizer

Optical and Quantum Electronics

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Influence of fluorine doped CdO thin films by an simplified spray pyrolysis technique using nebulizer(Article)

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Abstract

Abstract: The Cadmium oxide (CdO) and Fluorine (F) doped CdO thin films were effectively synthesized on glass substrates for different F doping concentrations (2, 4, 6, 8 at.%) using nebulized spray pyrolysis technique. The XRD analysis showed that all the films were polycrystalline having cubic structure with (111) preferential orientation. It was seen from the SEM photographs that the doping causes remarkable changes in the surface morphology. EDAX analysis clearly confirmed that the presence of expected elements cadmium, oxygen and fluorine in the final product, in appropriate proportions. The electrical study showed that the minimum resistivity value of 1.9×10^{-4} Ω cm with notable higher values of carrier concentration and mobility was achieved for 6 at.% of CdO:F film. Optical study exhibited that the band gap value of CdO film increases gradually with the increase in F-doping concentration, reaching maximum band gap value of 2.61 eV at 6 at.% and starts decreasing thereafter. Photoluminescence spectra depicted that the intensity of the emission peaks was significantly varied with doping concentrations. The high transparency, wide band gap energy, enhanced electrical properties and light sensitivity had been obtained infer that F-doped CdO thin films which find application in optoelectronic applications. Graphical abstract: [Figure not available: see fulltext.]. © 2019, Springer Science+Business Media, LLC, part of Springer Nature.

Author keywords

Cadmium oxide | Electrical properties | Optical properties | Semiconductor | Thin films

Indexed keywords

Engineering controlled terms: Cadmium compounds | Carrier concentration | Electric properties | Energy gap | Fluorine | Morphology | Optical films | Optical properties | Oxide films | Photoluminescence | Semiconductor doping | Semiconductor materials | Spray pyrolysis | Substrates | Surface morphology | Thin films | Wide band gap semiconductors

Engineering uncontrolled terms: Cadmium oxide | Doping concentration | Nebulized spray pyrolysis | Optoelectronic applications | Photoluminescence spectrum | Preferential orientation | Resistivity values | Spray-pyrolysis techniques

Engineering main heading: Fluorine compounds

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Amalraj, L.; Research Department of Physics, V.H.N.S.N College (Autonomous), Virudhunagar, Tamilnadu, India;

Document details - Ultrasonication-assisted synthesis of sphere-like strontium cerate nanoparticles (SrCeO₃ NPs) for the selective electrochemical detection of calcium channel antagonists nifedipine

Ultrasonics Sonochemistry

Volume 53, May 2019, Pages 44-54

Ultrasonication-assisted synthesis of sphere-like strontium cerate nanoparticles ($SrCeO_3$ NPs) for the selective electrochemical detection of calcium channel antagonists nifedipine(Article)

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Abstract

In this work, strontium cerate nanoparticles ($SrCeO_3$ NPs, SC NPs) were developed through facile synthetic techniques (Ultrasound-Assisted (UA) and Stirring-Assisted (SA) synthesis) and utilized as an electrocatalyst for the selective and sensitive electrochemical detection of calcium channel blocker nifedipine (NDF). The as-prepared UASC NPs and SASC NPs were characterized using XRD, Raman, TEM, EDS, mapping, XPS and BET analysis which exposed the formation of SC NPs in the form of spherical in shape and well crystalline in nature. BET studies reveal that UASC NPs have maximum surface area than that of SASC NPs. Further, the use of the as-developed UASC NPs and SASC NPs as an electrocatalyst for the detection of NDF. Interestingly, the UASC NPs modified screen printed carbon electrode (UASC NPs/SPCE) exhibited an excellent electrocatalytic activity in terms of lower reduction potential and enhanced reduction peak current when compared to SASC NPs and unmodified SPCE. Moreover, as-prepared UASC NPs/SPCE displayed wide linear response range (LR, 0.02–174 μM), lower detection limit (LOD, 5 nM) and good sensitivity (1.31 μA μM^{-1} cm^{-2}) than that of SASC NPs (LR = 0.02–157 μM, LOD = 6.4 nM, sensitivity – 1.27 μA $\mu M^{-1}cm^{-2}$). Furthermore, UASC NPs/SPCE showed an excellent selectivity even in the existence of potentially co-interfering compounds such as similar functional group containing drugs, pollutants, biological substances and some common cations/anions. The developed sensor was successfully employed for the determination of NDF in real lake water, commercial NDF tablet and urine samples with acceptable recovery.

Author keywords

Calcium channel antagonists | Nanoparticles | Nifedipine | Sonochemical synthesis | Strontium cerate

Indexed keywords

Engineering controlled terms: Calcium | Carboxylic acids | Cerium compounds | Drug delivery | Electrocatalysts | Electrodes | Nanoparticles | Pyridine | Reduction | Sonochemistry | Strontium | Strontium compounds | Synthesis (chemical) | Ultrasonic applications

Engineering uncontrolled terms: Calcium channel antagonists | Calcium channel blockers | Electrocatalytic activity | ELectrochemical detection | Nifedipine | Screen-printed carbon electrodes | Sonochemical synthesis | Strontium cerate

Engineering main heading: Chemical detection

EMTREE drug terms: cerium, nanoparticle, nifedipine, strontium, calcium channel blocking agent, nanoparticle, nifedipine, oxide, strontium cerium(IV) oxide

EMTREE medical terms: Article, catalyst, electrochemical detection, priority journal, Raman spectrometry, reduction (chemistry), synthesis, transmission electron microscopy, ultrasound, X ray diffraction, catalysis, chemistry, electrochemistry, electrode, limit of detection, synthesis

MeSH: Calcium Channel Blockers, Catalysis, Chemistry Techniques, Synthetic, Electrochemistry, Electrodes, Limit of Detection, Nanoparticles, Nifedipine, Oxides, Sonication

Chemicals and CAS Registry Numbers:

cerium, 7440-45-1; nifedipine, 21829-25-4; strontium, 7440-24-6; oxide, 16833-27-5;

Calcium Channel Blockers; Nifedipine; Oxides; strontium cerium(IV) oxide

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Source Type: Journal
Original language: English
DOI: 10.1016/j.ultsonch.2018.12.013
PubMed ID: 30559078
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Publisher: Elsevier B.V.

Chen, S.-M.; Electroanalysis and Bioelectrochemistry Lab, Department of Chemical Engineering and Biotechnology, National Taipei University of Technology, No. 1, Section 3, Chung-Hsiao East Road, Taipei, Taiwan;

Document details - Photocatalytic degradation of environmental perilous gentian violet dye using leucaena-mediated zinc oxide nanoparticle and its anticancer activity

Rare Metals

Volume 38, Issue 4, 10 April 2019, Pages 277-286

Photocatalytic degradation of environmental perilous gentian violet dye using leucaena-mediated zinc oxide nanoparticle and its anticancer activity(Article)

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Abstract

Abstract: Phytomediated synthesis of metal oxide nanoparticles has become a key research area in nanotechnology due to its wide applicability in various biomedical fields. The present work explores the biosynthesis of zinc oxide nanoparticles (ZnO-NPs) using Leucaena leucocephala leaf extract. The synthesised ZnO-NPs were characterised by ultraviolet–visible (UV–Vis) spectroscopy, scanning electron microscopy (SEM), energy-dispersive X-ray spectroscopy (EDX), Fourier transform infrared spectroscopy (FTIR), X-ray diffraction (XRD), transmission electron microscopy (TEM) and selected area electron diffraction (SAED) studies. Biosynthesised ZnO-NPs are found to have wurtzite hexagonal structure with particles distributed in the range of 50–200 nm as confirmed by TEM studies. The anticancer activity of ZnO-NPs against MCF-7 (breast cancer) and PC-3 (human prostate cancer) cell lines was evaluated using 3-(4, 5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay. From the assay, biosynthesised ZnO-NPs have better cytotoxic activity on PC-3 cell lines than MCF-7 cell lines. The in vitro cytotoxicity studies of biosynthesised ZnO-NPs against Dalton lymphoma ascites (DLA) cells reveal better antitumor activity of 92% inhibition with concentration of 200 $\mu g \cdot ml^{-1}$ of ZnO-NPs, and as the concentration increases, the anticancer efficiency as well increases, and also, it has excellent photocatalytic activity to degrade crystal violet dye in aqueous solution after irradiation of 90 min. The result suggests that the green synthesis of ZnO-NPs could be easily recovered and reused several times without any significant loss of the catalytic activity. The advantage of this technique lies in its low cost, easily climbable and non-use of toxic agents. Graphical abstract: [Figure not available: see fulltext.].

Author keywords

Catalysis | Nanostructured materials | Scanning electron microscopy | X-ray diffraction

Indexed keywords

Engineering controlled terms: Biochemistry | Catalysis | Catalyst activity | Cell culture | Cells | Diseases | Electron diffraction | Electrons | Energy dispersive spectroscopy | Fourier transform infrared spectroscopy | High resolution transmission electron microscopy | II-VI semiconductors | Metal nanoparticles | Metals | Nanostructured materials | Scanning electron microscopy | Synthesis (chemical) | Transmission electron microscopy | X ray diffraction | Zinc sulfide | ZnO nanoparticles

Engineering uncontrolled terms: Anti-tumor activities | Anticancer activities | Energy dispersive X ray spectroscopy | Excellent photocatalytic activities | Human prostate cancer | Metal oxide nanoparticles | Photo catalytic degradation | Selected area electron diffraction

Engineering main heading: Zinc oxide

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CODEN: RARME
Source Type: Journal
Original language: English
DOI: 10.1007/s12598-018-1189-5
Document Type: Article
Publisher: University of Science and Technology Beijing

Muthukrishnan, P.; Department of Chemistry, Faculty of Engineering, Karpagam Academy of Higher Education, Coimbatore, India;

Document details - Influence of annealing temperature on physical properties of Sn-doped CdO thin films by nebulized spray pyrolysis technique

Materials Science and Engineering: B

Volume 243, April 2019, Pages 54-64

Influence of annealing temperature on physical properties of Sn-doped CdO thin films by nebulized spray pyrolysis technique(Article)

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Abstract

Tin (Sn) doped cadmium oxide (CdO) thin films deposited onto the glass substrates by nebulized spray pyrolysis technique (NSP) were annealed for 20 min at different temperatures of 473–548 K in steps of 25 K. X-ray diffraction study showed that all these thin films were polycrystalline with major reflection along (1 1 1) plane and the crystallite size had increased at elevated annealing temperatures. From SEM images, it was found that annealing causes notable changes in the surface morphology. The oxidation states of Cd^{2+}, O^{2-} and Sn^{4+} were confirmed by X-ray photoelectron spectroscopy analysis. These films were found to have direct band gap energy lying in the range of 2.55–2.42 eV and the average transmittance varies from 73 to 87% with various annealing temperatures. The CdO thin films annealed at 523 K exhibited the lowest resistivity (1.03×10^{-4} Ω cm). © 2019 Elsevier B.V.

Author keywords

CdO | Crystal structure | Electrical properties | Luminescence | Optical properties | Solar cell | Thin films

Indexed keywords

Engineering controlled terms: Annealing | Cadmium compounds | Crystallite size | Energy gap | Glass substrates | Luminescence | Morphology | Optical properties | Oxide films | Solar cells | Spray pyrolysis | Surface morphology | Thin films | Tin oxides | X ray photoelectron spectroscopy

Engineering uncontrolled terms: Annealing temperatures | Cadmium oxide | Crystals structures | Glass substrates | Nebulized spray pyrolysis | Oxide thin films | Sn-doped | Spray-pyrolysis techniques | Thin-films | X-ray diffraction studies

Engineering main heading: Crystal structure

ISSN: 09215107
CODEN: MSBTE
Source Type: Journal
Original language: English
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Document Type: Article
Publisher: Elsevier Ltd

Amalraj, L.; Research Department of Physics, V.H.N.S.N College (Autonomous), Virudhunagar, Tamil Nadu, India;

Document details - A Detailed Investigation of Certain Electronic Transitions of the BaD Molecule for Astrophysical Applications

Journal of Applied Spectroscopy

Volume 86, Issue 1, 15 March 2019, Pages 147-153

A Detailed Investigation of Certain Electronic Transitions of the BaD Molecule for Astrophysical Applications(Article)

Shanmugapriya, G., Karthikeyan, B., Rajamanickam, N., El-Kork, N.

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Abstract

The spectroscopic and ro-vibrational constants, FCFs and r-centroids have been evaluated in the present study for $A\,^2\Pi_{1/2}$–$X\,^2\Sigma$, $A\,^2\Pi_{3/2}$–$X\,^2\Sigma$, $B\,^2\Sigma$–$X\,^2\Sigma$, $E\,^2\Pi_{1/2}$–$X\,^2\Sigma$, $E\,^2\Pi_{3/2}$–$X\,^2\Sigma$, $F\,^2\Sigma$–$X\,^2\Sigma$, and $L\,^2\Pi$–$X\,^2\Sigma$ band systems of the barium deuteride (BaD) molecule by adopting a reliable numerical integration procedure. The physical and astrophysical significances of the evaluated FCFs and r-centroids are discussed for all these band systems. The effect of vibration rotation interaction (VRI) on FCFs for the bands of the chosen band systems of BaD molecule is also studied. It is found from the results that the effect of VRI on FCFs is not so significant for the rotational quantum number (J) up to J = 50. For higher values of J like J = 100, there is a slight change in the value of FCFs due to the VRI effect. © 2019, Springer Science+Business Media, LLC, part of Springer Nature.

Author keywords

BaD molecule | Celestial environment | Franck–Condon factors | r-centroids | VRI effect

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Source Type: Journal
Document Type: Article
Original language: English
Publisher: Springer New York LLC

Karthikeyan, B.; Mepco Schlenk Engineering College, Department of Physics, Sivakasi, India;

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Document details - One point compactification of generalized topological spaces

Afrika Matematika

Volume 30, Issue 1-2, 4 March 2019, Pages 345-353

One point compactification of generalized topological spaces(Article) (Open Access)

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Abstract

The notions of a s-T_1 space, an almost generalized Hausdorff space, and a μ-locally compact space in the context of generalized topological spaces are introduced. Properties in relation to these spaces are established. Finally, a version of one point compactification of a s-T_1 space is obtained. © 2019, African Mathematical Union and Springer-Verlag GmbH Deutschland, ein Teil von Springer Nature.

Author keywords

Generalized topological spaces | One point compactification | μ-compact | μ-locally compact | μ-separation

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Source Type: Journal
Original language: English
DOI: 10.1007/s13370-019-00652-9
Document Type: Article
Publisher: Springer Verlag

Chinnaraman, G.; Department of Mathematics, V. H. N. S. N. College (Autonomous), Virudhunagar, India;

Document details - Effect of molar concentration on physical properties of spraydeposited SnO ₂ thin films using nebulizer

Journal of Sol-Gel Science and Technology

Volume 89, Issue 2, 15 February 2019, Pages 392-402

Effect of molar concentration on physical properties of spraydeposited SnO_2 thin films using nebulizer(Article)

Palanichamy, S., Mohamed, J.R., Kumar, K.D.A., Anitha, M., Pandiarajan, S., Amalraj, L.

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Abstract

In the present paper, tin dioxide (SnO_2) thin films had been fabricated with different precursor concentration in the range of 0.01–0.09 M onto amorphous glass substrates utilizing nebulizer spray method. The effect of precursor concentration on electrical, morphological, structural, optical, and photoluminescence properties has been investigated. XRD spectrum revealed that the polycrystalline nature of SnO_2 thin films with tetragonal structure in the range of precursor concentration 0.03–0.09 M, which are having a favorable growth orientation along (110) direction. The estimated average crystallite size varied between 22 and 53 nm. UV-Visible spectrum exposes the transmittance of SnO_2 thin films lies between 90 and 78% in the visible range. The direct band gap energy reduced from 3.83 to 3.71 eV on increasing precursor concentration upto 0.07 M and then it was further increased. Photoluminescence spectra at room temperature exhibited a strong peak at 362 nm with shoulder peak at 376 nm and two broad peaks are 493 nm and 518 nm. SEM analysis illustrated that the polyhedron-like grains were homogeneously arranged over the film surface. The film prepared at 0.07 M precursor concentration shows the least resistivity 2.41×10^{-3} Ω-cm and good figure of merit 16.41×10^{-3} $(\Omega/sq)^{-1}$. [Figure not available: see fulltext.]

Author keywords

Electrical measurements | NSP | Optical | Tin dioxide

Indexed keywords

Engineering controlled terms: Amorphous films | Crystallite size | Energy gap | Photoluminescence | Substrates | Tin dioxide

Engineering uncontrolled terms: Different precursors | Electrical measurement | Molar concentration | Optical | Photoluminescence properties | Photoluminescence spectrum | Precursor concentration | Tetragonal structure

Engineering main heading: Thin films

Funding details

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We are thankful to Dr. R. Ramesh Babu, Assistant Professor, Department of Physics, Bharathidasan University, Tiruchirappalli, India for analyzing the electrical characterization using Hall measurement instrument.

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Document Type: Article
Publisher: Springer New York LLC

Amalraj, L.; Research Department of Physics, V.H.N.S.N. College, Virudhunagar, Tamilnadu, India;

Document details - Best Practices in Arts and Science College Libraries in Dindigul District

Indian Journal of Information Sources and Services

Volume 9, Issue S1, February 2019, Pages 60-63

Best Practices in Arts and Science College Libraries in Dindigul District(Article)

Karuppasamy, P., Manohari, S., Amudha, G.

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Abstract

The Best practices are helping the users to derive maximum satisfaction from the library services. It is customer satisfaction through product or service. In an academic library student and teachers are the customers who are part of the academic community. Tiwari (2016) has proved that innovate services are more significant than heavy advertisements. This study has concluded that the library innovations service of the library can help the purpose of advanced teaching and learning. Yasminand Gnanaprasad (2017) have adopted fourteen best practices of the library services. This study concluded that best practices help to improve the quality of library services. This study has to examine the efficiency and effectiveness of the Content Management Software, Web page information sources, awareness programme of the Arts and Science College libraries of Dindigul District. Primary data was collected through questionnaire method. Garret's Ranking Techniques was used for this study to analyze the data. E-mail alert facilities are necessary to improve the quality of the best practices of the library service. © The Research Publication, www.trp.org.in.

Author keywords

Best Practices | Garret Ranking Techniques | Innovative Services

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Original language: English
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Document details - Green Synthesis of Silver Nanoparticles from De-oiled Rhizomes of Curcuma longa L. and Its Biomedical Potential

Springer Proceedings in Materials

2019, Pages 94-106

Green Synthesis of Silver Nanoparticles from De-oiled Rhizomes of Curcuma longa L. and Its Biomedical Potential(Book Chapter)

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Abstract

The present study deals with the synthesis of silver nanoparticles using de-oiled rhizomes of Curcuma longa aqueous extracts and its biomedical potential. Tumeric is the rhizome of Curcuma longa (Zingiberaceae) and Curcumin is extracted from it. Curcumin finds extensive use in the pharmaceutical industry. Synthesis of silver nanoparticles from 1 mM silver nitrate solution using the extract of turmeric spent was done. The colour changed from pale yellow to dark brown indicating the synthesis of silver nanoparticles. The synthesized silver nanoparticles were characterized by UV visible spectroscopy, XRD, FTIR and Zeta potential. These green synthesised silver nanoparticles were tested for antimicrobial activity by agar well diffusion method against seven human pathogenic strains such as Bacillus subtilis, Staphylococcus aureus, Streptococcus faecalis, Klebsiella pneumoniae, Pseudomonas aeruginosa, E.coli and Candida albicans. The zone of inhibition increased with increase in the concentration of silver nanoparticles in well diffusion method. Anticancer activity of silver nanoparticles was tested on breast cancer cell line, MCF-7. Cytotoxic effect was observed in tested sample concentrations after 48 h treatment. It also revealed that increase in concentration of drug showed increased cytotoxicity over the MCF-7 cell line. This efficient biomedical potential of the synthesized silver nanoparticles paves the way for its application in the area of nano-medicine.

Author keywords

Anticancer activity | Antimicrobial activity | MCF-7 | Tumeric spent

Indexed keywords

Engineering controlled terms: Bacteriology | Cell culture | Drug delivery | Escherichia coli | Fourier transform infrared spectroscopy | Metal nanoparticles | Silver compounds | Synthesis (chemical) | Ultraviolet visible spectroscopy

Engineering uncontrolled terms: Anti-microbial activity | Anticancer activities | Aqueous extracts | Curcuma longa | Curcumin | Diffusion method | Green synthesis | MCF-7 | Synthesised | Tumeric spend

Engineering main heading: Silver nanoparticles

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Source Type: Book Series
Original language: English
DOI: 10.1007/978-3-030-25135-2_10
Document Type: Book Chapter
Publisher: Springer Nature

Mehalingam, P.; Research Department of Botany, V.H.N. Senthikumara Nadar College (Autonomous), Virudhunagar, India;

Document details - Synthesis, characterization and catalytic performance of nanostructured dysprosium molybdate catalyst for selective biomolecule detection in biological and pharmaceutical samples

Journal of Materials Chemistry B

Volume 7, Issue 33, 2019, Pages 5065-5077

Synthesis, characterization and catalytic performance of nanostructured dysprosium molybdate catalyst for selective biomolecule detection in biological and pharmaceutical samples(Article)

Karthik, R., Mutharani, B., Chen, S.-M., Vinoth Kumar, J., Abinaya, M., Chen, T.-W., Lei, W., Hao, Q.

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Abstract

The current study reports a new, simple and fast method using a flake-like dysprosium molybdate (Dy_2MoO_6; FL-DyM) nanostructured material to detect the antibiotic drug metronidazole (METZ). This nanocomposite material was employed on the surface of a glassy carbon electrode (GCE) to develop the electrode (FL-DyM/GCE). Further, the synthesized FL-DyM was systematically characterized by powder X-ray diffraction (XRD), Raman spectroscopy, scanning electron microscopy (SEM), transmission electron microscopy (TEM), energy-dispersive X-ray diffraction (EDS), elemental mapping, X-ray photoelectron spectroscopy (XPS), and Brunauer-Emmett-Teller (BET) analyses. Cyclic (CV) and differential pulse voltammetry (DPV) techniques were used to study the electrochemical properties. The FL-DyM/GCE-based sensor demonstrated excellent selectivity and sensitivity for the detection of the drug METZ, which could be attributed to the strong affinity of FL-DyM towards the -NO_2 group in METZ, and the good electrocatalytic activity and conductivity of FL-DyM. The fabrication and optimization of the working electrode were accomplished with CV and DPV obtained by scan rate and pH studies. Compared to the bare GCE and other rare-earth metal molybdates, the FL-DyM/GCE sensor displayed a superior electrocatalytic activity response for METZ detection. The sensor demonstrated a good linear relationship over the concentration range of 0.01-2363 μM. The quantification and detection limits were found to be 0.010 μM and 0.0030 μM, respectively. The FL-DyM/GCE sensor displayed excellent selectivity, repeatability, reproducibility, and stability for the detection of METZ in human urine and commercial METZ tablet samples, which validates the new technique for efficient drug sensing in practical applications. © 2019 The Royal Society of Chemistry.

Indexed keywords

Engineering controlled terms: Dysprosium, Electrochemical sensors, High resolution transmission electron microscopy, Molybdenum compounds, Nanocatalysts, Nanocomposites, Negative ions, Rare earths, Scanning electron microscopy, Voltammetry, X ray diffraction, X ray photoelectron spectroscopy

Engineering uncontrolled terms: Brunauer emmett tellers, Differential pulse voltammetry, Electrocatalytic activity, Energy dispersive x-ray diffractions, Glassy carbon electrodes, Powder X ray diffraction, Rare-earth metal molybdates, Selectivity and sensitivity

Engineering main heading: Glass membrane electrodes

EMTREE drug terms: carbon, dysprosium, graphite, metronidazole, molybdenum, molybdic acid, nanocomposite

EMTREE medical terms: catalysis, chemistry, electrochemical analysis, electrode, human, limit of detection, pH, procedures, reproducibility, tablet, urine

MeSH: Carbon, Catalysis, Dysprosium, Electrochemical Techniques, Electrodes, Graphite, Humans, Hydrogen-Ion Concentration, Limit of Detection, Metronidazole, Molybdenum, Nanocomposites, Reproducibility of Results, Tablets

Topic:

Prominence percentile:

Chemicals and CAS Registry Numbers:

carbon, 7440-44-0; dysprosium, 7429-91-6; graphite, 7782-42-5; metronidazole, 39322-38-8, 443-48-1; molybdenum, 7439-98-7; molybdic acid, 11116-47-5, 14259-85-9, 7782-91-4;

Carbon; Dysprosium; Graphite; Metronidazole; molybdate; Molybdenum; Tablets

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CODEN: JMCBD
Source Type: Journal
Original language: English
DOI: 10.1039/c9tb01020c
PubMed ID: 31432868
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Publisher: Royal Society of Chemistry

Chen, S.-M.; Electroanalysis and Bioelectrochemistry Lab, Department of Chemical Engineering and Biotechnology, National Taipei University of Technology, No. 1, Section 3, Chung-Hsiao East Road, Taipei, Taiwan;

Document details - Designing novel perovskite-type strontium stannate (SrSnO₃) and its potential as an electrode material for the enhanced sensing of anti-inflammatory drug mesalamine in biological samples

New Journal of Chemistry

Volume 43, Issue 31, 2019, Pages 12264-12274

Designing novel perovskite-type strontium stannate ($SrSnO_3$) and its potential as an electrode material for the enhanced sensing of anti-inflammatory drug mesalamine in biological samples(Article)

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Abstract

The enhanced electrocatalytic activity of an electrode developed with a perovskite-type inorganic material is witnessed very often because of its unique properties. In this view, we synthesized a new perovskite-type sphere-like strontium stannate ($SrSnO_3$) material by a simple co-precipitation method with the assistance of urea, and it was utilized as an electrocatalyst for the electrochemical sensing of anti-inflammatory drug mesalamine (MES). Furthermore, the synthesized $SrSnO_3$ was systematically characterized by FE-SEM, EDX mapping, XRD, Raman spectroscopy, and XPS. The electrochemical properties of the synthesized $SrSnO_3$ were examined by using cyclic voltammetry and differential pulse voltammetry techniques; these techniques indicated that $SrSnO_3$ exhibited better electrochemical oxidation of MES when compared with previously reported catalysts. The $SrSnO_3$-modified glassy carbon electrode (GCE) showed a higher peak current response with a lower detection potential towards sensing MES when compared to unmodified GCE with a broader linear response range (0.01-212 μM), lower detection limit (0.002 μM), and higher sensitivity. Moreover, the modified electrode demonstrated better repeatability, reproducibility, stability, and selectivity even in the presence of potentially interfering compounds such as common inorganic and biological species, which did not disturb the oxidation signal of MES. Furthermore, real sample analysis was performed to investigate the practical feasibility of the synthesized $SrSnO_3$ in human urine, lake water and commercial MES drug samples with satisfactory recovery results. The reported sensor system provides an operative measure for sensing a very low MES content with high selectivity in real sample analysis.

Indexed keywords

EMTREE drug terms: carbon, lake water, mesalazine, perovskite, strontium, strontium stannate, unclassified drug

EMTREE medical terms: Article, catalyst, cyclic potentiometry, differential pulse voltammetry, field emission scanning electron microscopy, human, lake, limit of detection, oxidation, pH, precipitation, priority journal, Raman spectrometry, synthesis, X ray diffraction, X ray photoemission spectroscopy

Chemicals and CAS Registry Numbers:

carbon, 7440-44-0; mesalazine, 89-57-6; perovskite, 12194-71-7, 61027-03-0; strontium, 7440-24-6

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CODEN: NJCHE
Source Type: Journal
Original language: English
DOI: 10.1039/c9nj02197c
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Publisher: Royal Society of Chemistry

Chen, S.-M.; Electroanalysis and Bioelectrochemistry Lab, Department of Chemical Engineering and Biotechnology, National Taipei University of Technology, No. 1, Section 3, Chung-Hsiao East Road, Taipei, Taiwan;

Document details - Protein sequence in classifying dengue serotypes

Advances in Intelligent Systems and Computing

Volume 713, 2019, Pages 97-108

2nd International Conference on Advanced Computing and Intelligent Engineering, ICACIE 2017; Ajmer; India; 23 November 2017 through 25 November 2017; Code 216249

Protein sequence in classifying dengue serotypes(Conference Paper)

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Abstract

Dengue is the growing disease. It serves, especially in children. Different diagnosing methods like ELISA, Platelia, haemaocytometer, RT-PCR, decision tree algorithms and recommender system with fuzzy logic are used to diagnose the dengue by blood specimen. But these methods identify severe cases after five to ten days of the person infected by dengue. Some other methods require saliva and urine samples instead of blood specimen when a volume of blood samples cannot be obtained from person, especially from children. But from this sample, the correct result could not be identified. To overcome these problems, this paper proposes dengue diagnosis method based on amino acids or components in the protein sequence as it needs only skin cells or hair or nail which can be collected easily from the patients. The proposed method not only diagnoses the dengue but also identifies serotypes using statistical analysis of protein sequence. The experimental results prove that the proposed method identifies dengue and its serotypes correctly by amino acids and components of protein sequences. The proposed method is capable of finding deficiency or dominance of amino acids or components in the dengue-infected protein sequence by assessing entropy, relative and weighted average values of amino acids or components. © Springer Nature Singapore Pte Ltd. 2019.

Author keywords

Dengue serotypes | Diagnosing methods | Protein classification | Protein sequence

Indexed keywords

Engineering controlled terms: Amino acids | Blood | Data mining | Decision trees | Diagnosis | Fuzzy logic | Intelligent computing | Proteins | Statistical methods

Engineering uncontrolled terms: Blood specimens | Decision-tree algorithm | Diagnosing methods | Diagnosis methods | Protein Classification | Protein sequences | Serotypes | Weighted averages

Engineering main heading: Classification (of information)

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Original language: English

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Volume Editors: Pati B.,Panigrahi C.R.,Pujari A.K.,Bakshi S.,Misra S.
Publisher: Springer Verlag

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