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A mathematical study on magnetohydrodynamic permeable channel flow

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Abstract

The nonlinear differential equations governing the inherent irreversibility in a steady hydromagnetic permeable channel flow of a conducting fluid with variable electrical conductivity and asymmetric Navier slip at the channel walls in the presence of induced electrical field is solved. An approximate analytical solution for dimensionless velocity and dimensionless temperature are derived using Homotopy Analysis Method. The current density , the entropy generation number and the Bejan number are also derived analytically. The results obtained are discussed graphically and analytically.

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A structural unique 1D-MoO_3@3D-WO_3 nanohybrid for stable and reusable photocatalytic conversion of hexavalent chromium in aqueous medium

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A STUDY OF THE INFLUENCE OF DEMOGRAPHIC FACTORS ON GOLD PURCHASE BEHAVIOUR IN SMART CITIES IN TAMIL NADU

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ABSTRACT

We Indians valued physical things more than financial assets, but this has changed. They are cautious and like to be safeguarded. The pandemic problem is causing investors to buy. It is possible to set the investment condition here. Despite the various restrictions imposed by the Central Government and the Reserve Bank of India, people continue to invest in Gold. Gold These are well-liked investments. A "Gold ETF" is gaining popularity as a form of virtual Gold these days. When investors are concerned about inflation, they frequently purchase Gold as a risk diversifier and inflation hedge. Gold investors typically invest in both physical Gold (Jewellery, bars, coins, and so on) and virtual Gold. Socio-cultural, socioeconomic, psycho-behavioural, and lifestyle factors all have an influence on gold investing. This study looks at the behaviour of gold investors in Tamil Nadu. The purpose of this study is to inform future research on gold investment in Tamil Nadu by examining gold investment behaviour in six smart cities with small sample sizes. The study's goals are to learn about gold investors' preferences and choices. It drew on both primary and secondary sources of information. The primary data source is a 353-person survey conducted in Tamil Nadu's smart cities. Inhabitants of Coimbatore invest more than residents of other districts. In comparison to gold ETFs and other investment options. According to the poll, people in Chennai and Coimbatore favour gold.

KEYWORDS: Gold Investment, Demographic Factors, Investor Behaviour, Gender, ETFs.

INTRODUCTION

Investing is the process of putting money into something with the hope of profiting from it. Every investor wishes to maximize their profits. Investors may now select from a wide range of investment alternatives. Investors typically prefer traditional and modern approaches. Stocks, bonds, debentures, mutual funds, securities, real estate, bank deposits, postal savings, and precious metals such as Gold, silver, and diamonds are part of the investment portfolio. Demographic and financial factors impact investor intent. Some investors choose safe investments, while others like taking risks and reaping the benefits. The primary objective of an investor is to decrease risk while boosting return. When choosing an investment plan, Gold is an important consideration. It enjoys exceptional investor favouritism. Individuals invest in Gold regardless of their Income, despite the various limitations imposed by the central government and RBI. People do purchase coins and bars. Investors may now purchase cyber-Gold in the form of a gold ETF. Investors buy Gold to diversify their risk and maybe hedge against inflation. Gold investors generally invest in physical Gold (jewellery, bars, coins, and so on) and virtual Gold (digital Gold). Because of its corrosion resistance and malleability is used in space exploration, nanoparticle technology, and medicine. It's also used in the core of the iPhone. The location of investors impacts their gold investment selections as well. Different Indian places have unique characteristics. Each area has its own ideology and principles, and each region of the country reacts differently to similar events. It might be a financial, family, or political decision. Furthermore, when it comes to gold investment, different civilizations react differently and make different judgments. As a result, the purpose of this study is to look at investors' demographical factors influences buying behaviour of gold in smart cities of Tamilnadu.

A STUDY ON DETERMINANT FACTORS TOWARDS PERSONAL FINANCIAL PLANNING OF PRIVATE BANK EMPLOYEES IN SIVAKASI TOWN, TAMIL NADU

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Abstract: The concept of Personal financial planning is significant in determining a person's financial success. People were found to be more aware on spending their money in different sources. Therefore, it is essential to identify the Personal financial planning behaviour as people are more tend to spend rather than to save. Nevertheless, there is a lack of research on the determinants of factors affecting the attitude towards Personal financial planning behaviour. Thus this study aims to identify the factors affecting the Personal financial planning behaviour of private bank employees in Sivakasi. Five determinants are identified: Financial Knowledge, Religious Belief, Health and Income Uncertainty and Social Influence. Survey data was collected from 150 respondents using a set of structured questionnaire. Stratified random sampling method was adopted and the data collected were analyzed using SPSS. The study result indicated that social influence is identified to be the major determinant that influences the attitude towards Personal financial planning behaviour. The findings of this study will be of interest for the academics and practitioners concerned with money management skills so that they become independent financially for long term.
Key Words: Financial Literacy, Investment Decision, Financial Decision, Financial Planning, Savings Behaviour, Personal Finance

I. INTRODUCTION

Personal finance is a study on an individual's money management. In simple words, it is a process of managing funds or money, which belongs to a person or an individual so that he or she can get personal economic satisfaction. Personal finance is much important because it determines a person's or an individual's financial success (Kapoor, 2012). The significance of this study is to identify the factors influencing the attitude towards Personal Financial Planning behavior. This study becomes more important people tend to spend more rather than to plan and save money for emergencies, for use after retirement and for their future. Even though people earn more, yet many people failed to manage their personal financial very well still. Failure to manage their personal finance can lead them to a serious, long-term and negative impact to the personal and societal consequences. People who failed to plan their personal finance very well will end up with more stress, anger, guilt, embarrassment and a feeling of insecurity.

Apart from this, when individuals does not plan their personal finance well in advance, they will face lot of difficulties in developing their lives like delaying marriage or not getting married at all, postponing having children or remaining childless, divorcing or remarrying, changing jobs more frequently and having a lower ratio of children to parents. Personal financial planning is important to both individual and nation since it provides an individual with financial security for possible hard times and provides a nation with a valuable source of investment fund for economic development. People's awareness on Personal financial planning has been increasing day by day. The Personal savings of net income among the people of Sivakasi from the year of 2009 to 2015 is not stable but there is an increase in this rate from 2016 onwards. Therefore, due to this increasing rate in savings, the researcher intends to analyze what are the factors that affecting the attitude toward Personal financial planning behavior in Sivakasi.

II. OBJECTIVES OF THE STUDY

This study seeks to achieve the following objectives:

1. To explore the determinant factors behind the personal financial planning behaviour of private bank employees in Sivakasi.
2. To assess the relationship between determinant factors and personal financial planning behaviour of private bank employees in Sivakasi.

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A STUDY ON DEVOTEES' OPINION TOWARDS SERVICES AND PROBLEMS ENCOUNTERED AT RELIGIOUS SPOTS IN KUMBAKONAM TOWN

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Abstract:

Religion has long been a driving force behind journeys, and it is often regarded as the oldest inspiration for travel. Thousands of people travel each year to major pilgrimage sites around the world, both ancient and modern. India has had contact with almost all of the world's major religions, and despite Hinduism's current dominance, other religions such as Islam, Buddhism, and Christianity have affected a significant portion of the population. The aim of the study is to analyze the view of devotees towards the services offered and the problems faced by them in the religious places of Kumbakonam town. The study found out that available transport facilities are Easy accessible of Public Transport, Road Facility, Convenience of Transport Information System etc., and the available accommodation facilities are Non - Season Offer, Safety / Security and Availability of Medical Facility. The major problems faced by the devotees in the religious places are No proper information centre, Trouble in getting Darshan tickets, Non-availability of medical facilities, Product price is too high in the religious place, Too much of crowd on special occasions.

Keywords: Religious Spots, Devotees Problems, Services Offered, Kumbakonam, Devotees Opinion

1. Introduction:

Religious tourism, also known as spiritual tourism, has played a major role in the world. Tourists visiting holy places and religious centers are those who leave their home country for a span of not more than six months to visit holy places and religious centers. Religious tourism encompasses practices relating to the provision of facilities and meeting the needs of visitors visiting holy sites and religious centers outside of their normal surroundings. People were able to learn about other religious traditions as a result of the income and technology brought to countries that are designed in the field of tourism. The idea of religious tourism has been used as a pilgrimage for devotees of different religious traditions for many years. The recent development of tourism has given new life to the definition of religious tourism, which is described as a form of tourism that seeks out all religious destinations regardless of the visitors' faith. As a result, religious tourism benefits the country as a whole, regardless of religious context. Kumbakonam is a charming temple town in Tamil Nadu's Thanjavur District, known for its ancient Hindu places of worship. Pilgrims and visitors who want to see India's most important temples should come here without hesitation. The Kumba Mahamaham, which takes place every 12 years, is also well-known in the holy town. Pilgrims travel from all over the world to bathe in the Mahamaham, which is said to cleanse the soul of all sins committed during one's lifetime.

2. Need for Study:

This religious harmony, as well as the availability of a wide range of religious faiths with well-known religious centers, is seen as a fantastic opportunity for tourism's wonderful unifying phenomenon. There is plenty of tourism going on in Kumbakonam, as well as a variety of religious

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A STUDY ON PERFORMANCE OF GOLD ETF IN INDIA DURING COVID-19

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Abstract. This paper is a study of the Performance Evaluation of Gold ETFs in India during the Covid-19 Pandemic Situation. An analysis is carried out using performance evaluation techniques such as the Treynor Performance Index, the Sharpe Performance Index, and the Jensen Performance Index by measuring the alpha, beta, and standard deviations of the selected ETFs traded in NSE. Data for this study have been collected for two years from the NSE website from 1st Dec 2018 to 30th Nov 2020. The study shows that the Quantum Gold Fund (ETF) performs reasonably well in accordance with Sharpe's Model, Treynor's Model, and Jensen's Model. According to the Fema model, the IDBI Gold Exchange Traded Fund is better off. ICICI Prudential Gold Exchange Traded Fund shall perform well by the use of the Sortino Ratio. The Quantum Gold Fund has performed the best of the Gold ETFs chosen for the analysis. This research will enable market analysts and investors who find the best outlook in the Gold ETFs.
Keywords: COVID-19, Gold ETF, NSE, Performance Evaluation models.

1. Introduction

The coronavirus (COVID-19) Pandemic started in Wuhan City, China's Hubei Province, quickly engulfed the whole world at the end of December 2019. There are so many notable events like this scenario in world history, particularly during 2002-03 severe acute respiratory syndrome (SARS) and 1919 Spanish flu pandemic was an unforgettable event. This COVID-19 fatality rate is much lower than the above two diseases, but people worldwide still fear this pandemic condition. This COVID-19 is highly contagious and has caused economic and financial uncertainty worldwide. The fear generated by the virus has put substantial stress on financial markets, where price volatility has steadily increased. In terms of human tragedy, the heaviest toll is seen in the United States, Europe, and Asian nations.

However, in periods of economic uncertainty and volatility, investors worldwide are moving their portfolios from volatile asset types such as risky stocks to risk-free assets such as government securities, gold, etc. They found gold heaven because it is a liquid, counter-cyclical asset, and a long-term value store that can help investors achieve the core goals of stability, liquidity, and return. Traditionally, people in India invest in physical gold and consider it one of the oldest and precious metals. It is an auspicious gift and one of the most robust investment avenues. According to various surveys, India has 16,000 tonnes of gold.

According to the world gold Council, March 2020th, the Indian edition reported that since 1973 Gold has generated an average yearly return benefits of 14.10 per cent in rupee terms; during the pandemic situation, gold price volatility is too high; it reached about 50 thousand rupees per 10 grams. This price hick's main reason is that many World Gold Mines temporarily shut down their business due to the Pandemic that will also affect gold prices. Small investors have difficulty making investments in gold due to rising gold prices. To enable investors to invest in gold, the Gold Exchange Traded Fund (ETF) was launched. It was first revealed in the North Americas in 1993 [7]. In India, ETF was introduced in 2007. ETFs are also available in other ways such as ETF, International Index ETF, etc. Gold ETF is a stock market investment fund. It operates like mutual funds. Gold ETF is listed in stock exchanges as another instrument and traded at net asset prices of the underlying properties. Gold ETF may be purchased or sold online and kept in Demat. These Gold ETFs represent physical gold and are similar to physical gold. [3] ETFs are easily traded on the market, providing benefits like exact pricing, easy accessibility, purity, stability, smaller denomination, and tax benefits [12] [5]. This research paper aims to investigate Gold ETF's success during India's COVID-19 pandemic situation.

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A Study on the Growth of Mice Industry in India

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Abstract :

India's meeting and convention industry has developed dramatically over the last few decades. Interest in the industry has developed among everyone and competition has been intensified in the market place due to its significant contributions to the local and national economies. India has witnessed a rapid growth in MICE industry, especially after economic liberalization. World class convention centers and hotel have been developed to host the international meetings, conventions, conferences, and the like. This research paper identifies the growth of the convention industry and projects the various strategies that can help to improve the country's competitiveness

Keywords : Convention industry, Convention centre, MICE

I. Introduction:

The growth of information technology and liberalization of trade between countries has posed many challenges in different disciplines which warranted a common platform for experts in different parts of globe to discuss and decide an unified and improved measures to overcome such challenges. This lead to the development of a new industry, in different continents of the world, called Meetings, Incentives, Conventions, and Exhibitions [MICE] industry. The most lucrative and attractive segments of MICE are the meeting and conventions sectors. Many corporations and associations of various industries hold one or more events such as meetings, conventions, conferences, exhibitions and other related activities every year to project them as a leader in their respective industry. Over the past decades, the growth of the meeting and conventions sector has generated a significant contribution to the development and well being of local, national and global economies. More specifically, MICE industry also supports the faster growth of overall travel and tourism sector. Today, though entangled by COVID pandemic, these functions are being organized in all parts of the world exploiting the technology, environment, government policies and other attractions of respective places. This research paper based in desk research presents the concept of MICE, continent wise share of market, country wise number of conventions and number of participants and challenges of Indian MICE market.

II. MICE Industry:

MICE is a new kind of industry that provide every service relating to the conglomeration of skills, ideas and personalities to demonstrate, discuss, deliberate, decide and disseminate future course of action for the sustainable development of any sector like economy, culture, society and spiritual wellbeing. MICE stands for four different activities, namely, Meetings, lncentive travels, Conventions and Exhibitions.[1]

[1] MICE report – Thailand Convention and Exhibition Bureau (TCEB)

A STUDY ON VARIOUS FORMS OF GOLDINVESTMENT AVENUES IN TAMIL NADU

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ABSTRACT

Money plays a vital role in everyone's lives in this modern time—each person saved from current consumption for the benefit of future needs. Saving people is invested in different assets to meet future needs. Individual savings are invested in assets based on risk and profit demand, security money, and liquidity. Gold Investing is one of the best alternative investment avenues. According to various studies, 16,000 tonnes of gold are predominantly in the form of jewellery in Indian houses. Gold investments can be made through different options such as jewellery, coins, bullions, ETF, mutual funds, e-gold etc. Various ways of investing in gold create confusion between investors in the current market scenario, a highly volatile and rapidly changing market place. The present study "A study on different forms of gold investment in Tamilnadu" seeks to examine forms of investment in gold available to investors. The goals of the study are to understand the various investment options for investors, the factors and know-how of investment in gold, for and against different forms of investment, and to help investors to raise awareness of diverse investment possibilities for gold. Primary and secondary data were collected for the study. The main data is a website, research paper and magazine questionnaire and secondary data. Research has shown that many investors still favour forms of investments in jewellery, gold coins and gold bullion and prefer to invest in ETF and Future and options to make investments more profitable and more comfortable. Gold mutual funds encourage investors to own gold without taking ownership of physical gold.

Keywords: Gold Investment, ETF, Investment Behaviour, Risk and Return, Gold Coins.

INTRODUCTION

Gold has been accepted as a universal medium for exchange since ancient times. The value of gold was already discovered in ancient times. People took gold to make jewellery and currency. It is a symbol of wealth, beauty and cultural heritage. Gold is a relatively dense, brilliant yellow metal. As an element, gold is exceptionally corrosion-resistant (by oxygen, but many other chemicals as well). Gold, with the symbol Au and an atomic number of 79, is a chemical element. Gold is the dense, soft, shiny and the most mouldable and duct-like metal known." It is regarded as a safe investment and used in large numbers in festivals and ceremonies in India. History shows that in times of high inflation, the performance of gold increases. Even during the recession, the price of gold appears to be upwards so many investors consider gold the best investment you can make to protect yourself in the stock market. Besides, however, gold also contributes significantly to a wide range of technologies. Gold is used in space exploration, nanoparticles technology and medicine due to its physical characteristics such as corrosion resistance and highly malleable and ductile. It is also used as the bonding wire on an iPhone's core. Therefore, this paper aims to explore various gold investments avenues in Tamilnadu.

REVIEW OF LITERATURE

A wide range of studies has been conducted on(Chua, Sick, & Woodward, 1990) explored the possibility of diversifying a portfolio of gold investments and Stock, they found that investors can use gold as a valuable tool for short-term and long-term portfolio diversification. (Johnson & Soenen, 1997), has been identified that gold, due to its negative/low correlation with bonds and stocks, have the potential benefit of reducing risk through diversification of portfolios.(Blose, 1996),examined the impact that returns on gold bullion have on returns on mutual funds that invest

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AN ANALYSIS REGARDING INTERROGATION ON FUNCTIONING OF FIREWORKS

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Abstract

This research attempts to explore the challenges of firework factories on functioning in Virudhunagar District. Fireworks industry is a well known hazardous industry, which caters 80 to 90% of the firework production done in Virudhunagar District. This study consists of 60 firework factories situated in and around Sivakasi of Virudhunagar District. This population is small, but a vital component of total firecrackers production and a much needed source of financial revenue to the country. Firework factories are regularized under Explosives Act, 2008 and frequent inspection by the authorities of Petrolium Explosives and from Revenue Department in terms of their storing and maintenance raw materials, stocking, process of producing, maintenance of labour records and so on. Recent times these industry faces severe interrogation relating to their running and processing, because of environment protection and workplace accidents. This study makes an attempt to find out interrogations on functioning of firework factories in the study area and try to find out solution to serve them better.

Keywords: Firework; stringent rules and regulation; production; marketing; labour; no possibility of exports;

INTRODUCTION

Firework Industry is a hazardous industry, the units are regulated by a host of Law such as the Explosive Act 1984, Explosives Rules 1983, the Arms Act 1959 and Arms Rules 1962. The regulating agencies include the Department of Explosives of Government of India and various departments of state Government. The Industry engaged with 9 months of productivity for attaining the one day crackling at Diwali. There are nearly 900 registered firework units in Virudhunagar District provide direct employment to about 2,00,000 workers and indirect employment of 3,00,000 workers which includes tube making, wire cutting, box making, tools and die, printing, logistics and so on. Defined as hazardous industry provides consumer crackers during festivals and military and civilian explosives product to the government. Such an important industry now faces many critical issues and challenges on their production and its marketing. Stringent rules and regulations on its running and unable to adopt modern technologies for their production makes more critical to run the factory at present and near future. In the study area, Virudhunagar District due to its dry and hot climate condition, lack of impossibility of adopting agriculture, most of the people work in this factories for their lives. The production process of these factories majorly belong with manpower, unfortunate accidents happen in the firework industry force the business more risky. This study makes an attempt to find out the solution on challenges faced by the manufacturer on functioning of fireworks.

Review of Literature

Dr. T. Sekar, S.N. Ramasamy and Dr. NVN. Nampoothiri (2010), Fireworks working environment and man made hazards during the time of processing have been studied in this research paper. The researcher concluded that, at the time of planning industrial estate, the damages to buildings associated with the accidental explosions during the manufacturing of firework can be minimized while it should be situated in non-residential areas. Effective Planning and administration of an Industrial estate will give a result to safety workplace to workers with improved occupancy and earning conditions and safe manufacturing process leads to accident free production which also improves productivity and strengthen the marketing.

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AN ANALYTICAL STUDY ON DECISION MAKING BEHAVIOR OF WOMEN IN FARMING OPERATIONS

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Abstract

Women play a predominant role in agricultural workforce. They did tedious and back – breaking tasks in agriculture, livestock management and household work. Women are engaged in agricultural activities in different ways depending on socio – economic status of their family and regional factors. They work as paid labourers, cultivators, managers of agriculture production by way of supervision and participation on post-harvest operations. Women not only contribute their work force in farming but give the suggestions to develop their farming operations. Even though they contribute significant participation in agricultural activities they have not given full chance to participate in decision making in farming activity. Keeping thesepoint in mind the present study makes an attempt to explore the decision-making behavior of women in farming operations in putukottai, sivakasi block with sample of 100 farm women. The data was collected through personal interview method. The statistical tools like percentage and growth rate were used for analyzing collected data. The present also attempt to trace out the constraints faced by women in taking decision relates to farming operations.

Keywords: Farming, Decision Making, Participation**.**

Introduction

Women play a vital role in household activities and farming activities. They are engaged in agricultural activities in different ways depending on socio – economic status of their family and regional factors. They work as paid laborers, cultivators doing labour on their own land, managers of certain aspects of agriculture production by way of supervision. Rural women mainly farmers number at least 1.6 billion worldwide and represented more than the quarter of total population. Nearly half of the world's farmers are women and they comprise most of the agricultural work.

In agriculture women involved in both in self – employment and wage employment. In our male dominated society female working in agricultural sector treated as helper. Even though they have enriched knowledge about cropping pattern and management practices, agriculture and allied activities their contributions are not authorized. In spite of their involvement in agricultural activities they face number of hurdles and challenges. Female farmers are not empowered to make decisions about the land she works. Even though their contribution is extensive in agriculture they have less access than men in taking agricultural decision.

Significance of the study

Women participation in farming decision in agricultural activities is quit revival. Major constraints faced by women in decision making are traditional and cultural practices, low self-esteem, poor knowledge, misconception about women knowledge in farming. Women remain invisible workers and their contribution as decision maker is questionable. Hence the present study was conducted to determining the constraints faced by women farmers in decision making of farming activities.

Methodology

The study is based on both primary and secondary data. Secondary data has been collected from various sources such as journals, magazines and websites. In order to get the information related to constraints faced by women farmers and decision making behaviour primary data has been collected from well-structured interview schedule the study was conducted in Pudukottai village, Sivakasi block of Virudhunagar district the selection of the village was purposively made with the consideration of agriculture as the main source of livelihood of rural people. Hundred farm women as respondents were selected for the study. The collected data has been analysed by using the statistical tools like Growth Rate, Simple Linear Regression Model Ranking Technique and MANOVA technique.

Objectives of the study

1. To analyse the trends in participation of women in agriculture sector.
2. To analyse the growth of women workforce engaged in agriculture activities.
3. To study the decision-making behavior of women in farming activities.
4. To find out the major constraints and challenges faced by women farmers in taking decision.

An Application Of Max-Radial Number Of Graphs In Game Theory

Document Type : Primary Research paper

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Abstract

For a graph $G(V,E)$, the S-radial set, $BR(S)$, is defined for any set $S \subseteq V$, as the set of vertices $u \in V \setminus S$ which are at a distance of radius of G from some vertex $v \in S$. The Max-Radial number of G is the parameter which is defined as $\{|BR(S)|-|S|S\ max\}$. The study on this parameter faces the challenge of placing the maximum number of maximal length strings with certain conditions in any graph model. In this paper, we study the varied properties of this parameter. We characterize the extremal graphs for the Max-Radial concept in graphs. Also we prove the existence of graphs with given order and Max-Radial number.

Keywords

Metrics ; Differential ; Max-Radial number ; R-Differential ; Radius ;

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AN EMPIRICAL STUDY ON GOLD PRICE DISCOVERY AND VOLATILITY: A THEORETICAL REVIEW

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ABSTRACT
The present study aims to review the research studies and literature to gain knowledge about the field of price discovery and Volatility of the Indian Gold market and know the relationship between spot and futures gold price. In order to review the literature, research papers have been collected from various refereed journals, websites, and other secondary data sources related to price volatility and price discovery of Gold in the Indian context. Findings suggest that the price discovery process is happening in the futures market. This price discovery and the number of volumes traded in the market also have an impact on Volatility. Gold has a long-run relationship with other variables, but in the short-run period its doesn't have due to various factors; this study will help investors and researchers to know about Indian gold markets' existing reviews.

KEYWORDS: Gold Price Discovery, Price Volatility, Commodity Market, Investment

INTRODUCTION
Globalization made commodity markets as well as structured and more systematic transactions. Almost all the markets are integrated now; if anything happens in any one of the markets, it will significantly impact all other markets in the world. Due to technological development, its more transparent and speedy transaction is happing in the commodity market. Hence, many investors are willing to invest and trade in the commodity markets, especially in theBullion market. All the Indians are having more sentimental towards Gold; as per the latest survey,more than 16 tons of Gold are available in India. There is very less research work that has only been done in the area of Gold markets in India. It is understood from the literature review that research on understanding the relationship between spot and the future price of Gold in India.

Review of literature is the backbone for any research work. Without this process, the justification as to settling down on objectives is not valid. In other words, the primary aim of any research is not justifiable unless fully supported by an excellent and extensive review of literatureon the subject issue. This review is essential to obtain a clear picture of studies that various researchers in these areas have conducted till date and where it is possible to identify gaps in the existing research. The relevant literature, done post-2005, has only been considered because the futures trading in Gold in India is a recent development. A sufficient number of studies deal withthe price volatility and price discovery of various commodities and various markets. But there is alack of analysis regarding the price discovery of Gold in the Indian context. Also, to know the relationship between the spot and future price of Gold in India. Hence, this study will pay close attention to the analysis of gold prices, especially in the Indian market

OBJECTIVES OF THE STUDY
- To review the Empirical studies on price discovery and Volatility
- To review Empirical studies on the relationship between spot and future gold market
- To give significant findings and conclusion based on the review

24. An Exploration of Investors' Behavior in Gold Investment in Selected Smart Cities in Tamil Nadu

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Abstract

We Indians used to value things more than money, but that has changed. They are wary and want to be protected. Investors are buying due to the epidemic. The investment condition can be set here. Despite the Central Government and the Reserve Bank of India's regulations, individuals continue to invest in Gold. Gold These are popular bets. A "Gold ETF" is becoming a popular type of virtual Gold. Concerned about inflation, investors often buy Gold as a risk diversifier and inflation hedge. Gold investors commonly invest in both actual and virtual gold (jewellery, bars, coins, etc.). Factors such as culture, economics, psychology, and lifestyle affect gold investing. This research examines gold investors in Tamil Nadu. This study examines gold investment behaviour in six smart cities in Tamil Nadu to guide future research on gold investment in Tamil Nadu. These are the study's objectives. It used primary and secondary sources of data. A 353-person survey in Tamil Nadu's smart cities provided the basic data. Coimbatore inhabitants invest more than other districts. Compared to gold ETFs and other choices. A poll in Chennai and Coimbatore shows gold preference.

Keywords - Gold Investment, ETFs.

Introduction

We Indians used to prioritise tangibles above financial possessions, but that has changed. They are cautious and protective. Fear of pandemic drives investors to purchase. You may set the investment condition here. Despite the Central Government and Reserve Bank of India's limitations, individuals continue to invest in Gold. Gold Popular investments. These days, a

An Exploratory Study on Decision Making Empowerment of Women Idli Vendors

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Abstract: Vending is an important and natural source of employment for a large number of urban poor, men and women alike. Idle vending is one of the important sources of livelihood for economically weaker sections. Idle vending is wide spread business which is mostly carried out by women especially people those who are from underprivileged society. Many of the women set up this roadside eatery in order to take care of their families. The eateries do face difficulties such as increase in price of firewood, raw materials, their availability and the like, yet they weather the storm. The roles of idli women vendors are multifaceted in nature. They are all running their idli vending business with normal profit, playing a good role like a managerial economist. The following objective have been framed for the purpose of the study: (i) to identify the background profile of women idli vendors, (ii).to find out the motivational drive of doing the self-entrepreneurship among idli vendors. And (iii) to explore the decision making empowerment among the idli vendors.

Purposive sampling method has been adopted to collect primary data. The choice of the sample items depends on the purpose of the researcher. 200 women idli vendors are selected as sample units in the study area. The objectives of the study were analyzed with help of simple percentage analysis, garret ranking techniques and one way Annova and Post- Hoc Technique

Keywords: Idli Vending, Women, Empowerment

1. INTRODUCTION

Women place a respectable and important part on our society. To be independent they starting up small and medium enterprises with their hard work and with sheer dedication. In the past fifty years, society shifted their perspectives of women being primarily child bearers and caregivers to include primary breadwinners or co- contributors to the family income. Idle vending is one of the important sources of livelihood for economically weaker sections. Idle vending is wide spread business which is mostly carried out by women especially people those who are from underprivileged society.

Vending is an important and natural source of employment for a large number of urban poor, men and women alike. It requires skills that can be gained outside the formal education setup, is quite flexible and does not require heavy capital investment and also does not have significant entry barriers.

As a family business, idli vendors would often operate as a husband and wife team, however in other cases vendors relied on other female family members to help out as needed. And while many tasks were done by either men or women depending on who was available, it is also clear that certain activities were more likely to be done by women than men and vice versa. While men's roles tended to be more visible and extroverted, women were often more involved behind the scenes in the primary preparation stages of idli and the washing of dishes. However, when an enterprise was run exclusively by women, both the more visible and less visible roles became the domain of women and their workload was increased. Idli vendors provide an important economic and cultural connection between rural and urban life.

Many of the women set up this roadside eatery in order to take care of their families. The eateries do face difficulties such as increase in price of firewood, raw materials, their availability and the like, yet they weather the storm. The women continue to offer their faire knowing that making idlies not only provide them with a livelihood, but offers sustenance to countless people. To

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Anamoly Detection Using Pso In Cloud Integrated Iot Devices Usign Mdgan

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Abstract:The major impact of IoT functionalities primary depend on its cloud architecture. Though both these technologies executes in parallel but differs based on its principles and its functionalities. The device demand request is quenched using cloud methodologies as the resources are dynamic in nature. The access and demand are adopted for every resource and deploys cloud SPI architecture as the resources works on all the three verticals of cloud. The dynamic functionality is done without human intervention and are carried out by the basic principles of IoT. Due to this there is an urge for setting vigorous security mechanism in cloud and IoT to detect its anomalies. The launch of 2PA in this work implies security measures over IoT devices that get connect with the cloud for resource access. Both grant and access mechanisms are done with 2PA methods for providing immense security features for anomaly detection. The impact of PSO in this work provides optimization value for every IoT resources and the results are evaluated by MDGAN algorithm for providing optimized results.

Keywords: IoT, Resource Access, Two phase authentication (2PA), IoT Security, MDGAN, PSO

1. INTRODUCTION

One of key features of IoT is the resource allocation and its transactions. Steps to taken for ensuring secure transaction over un-trusted networks needs more observation for detecting anomalies. Cloud architecture are proven to be more secure and in our earlier work also addresses the same for providing secure solution for cloud transactions and its approach. As there is a technology drift for introducing the concept of IoT over cloud networks, more security measures need to undergone to balance the secure breeches between the IoT and cloud. The basic functionalities of cloud and IoT are resource grant and access to make transaction not become vulnerable to threats.

The introduction of Smart Grids (SG) makes the two communications to connect both IoT with the cloud using its sensors. The sensor gains the functionalities of grant and access mechanism to test its connection with the cloud using its sensors. The cloud utility service is activated that ensures the basic secure connection principles of integrity and confidentiality. Despite launching the basic secure mechanism the devices are not free from vulnerable threats. The connection between IoT devices with the cloud are done by SG hence the secure mechanism is applied to SG.

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Bioactive metabolites from ethyl acetate extract of leaves of *Melia dubia* L., against human and plant microbial pathogens

JP Nikkitha, P Suresh, S Kameshwaran, M Rekha, G Mahendra Perumal and V Shanmugaiah

Abstract
Antimicrobial metabolites are screening from medicinal plants is a promising technique to combat the growing issue of drug-resistant infections in humans and plants. In the present study, antimicrobial activity of *Melia dubia* L., was tested against human and plant pathogenic microbes by well diffusion method. Among three solvent system, ethyl acetate extract of *M. dubia* was showed significant activity towards human and plant pathogens such as *Escherichia coli* MTCC443, *Salmonella typhi* MTCC733, *Bacillus cereus* MTCC 430, *Staphylococcus epidermidis* MTCC 10623, *Klebseilla* sp. MTCC 3384, *Rhizoctonia solani*, *Macrophomina phaseolina*, *Sclerotium rolfsii* and *Fusarium oxysporum* with different level of zone of inhibition (ZOI) from 2 mm to 15 mm and 5 mm to 27 compared to control. The maximum quantity of phytochemical constituents like tannins, total phenol, flavonoids, saponins and alkaloids were obtained from ethyl acetate extract of *M. dubia* in comparison with other two solvent system such as acetone and petroleum ether. From ethyl acetate extracts of *M. dubia*, four spots of biomolecules with Rf values of 0.46, 0.41, 0.32 and 0.18 were detected on thin layer chromatography (TLC). Bioactive compounds are now undergoing purification and characterisation from *M. dubia*.

Keywords: *M. dubia* L, phytochemical constituents, bioactive compounds. TLC and antimicrobial activity

Introduction
The herb *Melia dubia* L., also known as Hill Neem, Malai Vembu, Munnattikaraka, and it would be used as an andithelmentic, as well as for gastrointestinal and colic diseases (Saini *et al*., 2007) [29]. Chemical pesticides', antibiotics and fungicides are cause severe threat to the human being and affect the plant health. Problem of drug-resistant microbes, have spurred to scientists to explore for more effective and environmentally benign alternatives in recent years (Aktar *et al*., 2009; Akacha *et al*., 2016) [2, 1]. In truth, microbial resistance is becoming a bigger issue, and the future of antimicrobial drug use is still up in the air. Furthermore, due to the many adverse effects of anti-inflammatory medicines, treating chronic inflammatory illnesses is challenging and impacts for humans (Nascimento *et al*., 2000; Li *et al*., 2003) [21, 16]. Infectious disease is the major cause of death in underdeveloped countries, accounting for over half of all deaths (Murtaza *et al*., 2015) [19]. Plants are a major source of raw materials for medicines, which are used to treat a wide range of human ailments. Because of their compatibility with our biological system, natural-source medications have captivated the interest of modern civilization (Amalraj, 1983; Paritala *et al*., 2014) [3, 23]. Scientific study on medicinal plants is centered on the discovery of active principles in plants, as well as a scientific examination of remedies that leads to product standardization and quality control to assure product safety. After passing specific tests, they may be approved for use in primary health care. In this case, previous research initiatives may have resulted in the development of new medications. (Farnsworth, 1988; Paritala *et al*., 2014; Goswami *et al*., 2020) [8, 23, 10].
Antibiotic-resistant bacteria are becoming more common, and synthetic treatments may have negative side effects (Priya *et al*., 2020) [25]. In order to find novel sources of plant medications, several plants have been investigated for a wide range of biological activity in various research organizations. Because, they have so much therapeutic potential (Sandhya *et al*., 2006; Paritala *et al*., 2014), plant-based antibacterial activity represents a significant

NANO EXPRESS

PAPER

Biocompatibility assessment of silver chloride nanoparticles derived from *Padina gymnospora* and its therapeutic potential

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Keywords: silver chloride nanoparticles, breast cancer, *Aedes aegypti*, antimicrobial, larvicidal, cytotoxicity, flow cytometry

Abstract

The objective of the present work was to improve the biological activity of *Padina gymnospora*. In the current study, silver chloride nanoparticles have been synthesized using the aqueous extract of *Padina gymnospora* and further characterized by ultraviolet-visible spectroscopy, Fourier-transform infrared spectroscopy, x-ray powder diffraction, scanning electron microscopy, energy dispersive spectroscopy, transmission electron microscopy and atomic force microscope. Further, the hemolytic activity and eco-toxicity of silver chloride nanoparticles analyzed. The synthesized silver chloride nanoparticles were found to be mono-dispersed and spherical with an average size of 11.5–32.86 nm. The particles showed an anticancer effect in a dose-dependent manner against breast cancer cell line (MCF-7 cell lines) ($IC_{50} = 31.37\ \mu g\ ml^{-1}$). In addition, it showed the larvicidal activity against *Aedes aegypti* at a lower dose ($3.92\ \mu g\ ml^{-1}$) than that of the aqueous extract ($13.01\ \mu g\ ml^{-1}$). Nanoparticles also exhibited greater antimicrobial activity for both bacterial and fungal pathogens. The synthesized silver chloride nanoparticles showed a maximum zone of inhibition, i.e., 31 mm for *Candida albicans* followed and 27 mm for vancomycin resistance *Enterococcus faecalis*.The results suggest the possible use of synthesized silver nanoparticles with *P. gymnospora* as therapeutic agent for breast cancer, dengue vector control and as antimicrobial agent.

1. Introduction

Evolving nano-based therapeutics has received substantial attention over the last two decades [1]. The fusion of silver nanoparticles with natural resources is looked at as an eco-friendly and cost-effective approach that bounces progression over the other Physico-chemical methods [2–5]. Nanotechnology, a rapidly growing field which involves the production and use of nanomaterials in various research areas [6–8]. At the present time, researchers are aimed to design the synthesis of nanoparticles for various applications which includes therapeutics and diagnostics purposes, based on their cellular mechanisms and the advanced technology in nanomaterials [1]. Silver ions have the capability to inhibit the bacterial multiplication, by binding and denaturing bacterial DNA, thus affecting the ribosomal subunit protein and some enzymes important for bacterial cell growth by penetrating the cells [6, 9, 10]. Silver nanoparticles, the most striking metal nanoparticles which have anti-tumour efficacy [11–13], antimicrobial [14–16], and adjuvanticity [7]. In biomedical and clinical research studies, the preparation of nanoparticles with the desired properties has become a topic of considerable importance for researchers in order to achieve biocompatibility, biosafety and substantial drug localization to the cells [17–19].

Research Article

Comprehensive biological evaluation (DNA-binding, cleavage, and antimicrobial activity) of β-diketimine Schiff base ligands and their Cu(II) and Zn(II) complexes

M. Samuel & N. Raman

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Abstract

This article focuses on the combination of Cu(II) and Zn(II) ions with sulfur derivatives having Knoevenagel condensate β-diketimines and their pharmacological evaluation. Characterization of these complexes was done by usual spectroscopic and analytical techniques. The observed data demonstrate that the complexes have 1:1 (metal:Schiff base derivative) stoichiometry, [$MLCl_2$] (where M = Cu(II) and Zn(II); L = Schiff base derivatives) and adopt square-planar geometry. From the results of *in vitro* DNA-tailoring bioassay studies (UV-vis, cyclic voltammetry, viscosity, and gel electrophoresis techniques) minor-groove-binding mode is exhibited between the synthesized compounds and the target CT-DNA. Moreover, they effectively cleave the supercoiled pBR322 DNA. Pharmacokinetic behavior is studied by SWISS ADMET online software. The optimized geometry and the quantum mechanical examinations of the synthesized compounds are carried out in Gaussian 09 W software by using B3LYP method, which implies that the nitro compounds have higher biological profile than other compounds. The *in vitro* antimicrobial screening impact has been performed against different microorganisms by well dispersion method. It has been found that the antimicrobial efficacy of the Schiff base is expanded on complexation with metal ions. Molecular docking study has been carried out on the cyclooxygenase (6-COX) enzyme for all the synthesized compounds.

Construction of Novel Metal-Free Graphene Oxide/Graphitic Carbon Nitride Nanohybrids: A 2D–2D Amalgamation for the Effective Dedyeing of Waste Water

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Kasirajan Prakash & Swaminathan Karuthapandian

Abstract

In this present study, we have reported a novel metal-free graphene oxide/graphitic carbon nitride (GO/g-C_3N_4) 2D/2D hybrid heterojunction for the removal of hazardous organic contaminants in aqueous solution under visible light embellishment. The reported photocatalyst was prepared by the combined ultrasonic dispersion method and thoroughly investigated by several spectral and microscopic studies viz FT-IR, p-XRD, SEM with EDX, TEM, XPS Photoluminescence etc., The photocatalytic activity of GO/g-C_3N_4 nanohybrids much outperformed than pristine g-C_3N_4 sample in the photodegradation of Rhodamine B and crystal violet organic pollutants. The enhanced synergistic effect of GO/g-C_3N_4 is mainly due to the proficient separation of photogenerated electron–hole pairs and tuned band gap with unique morphology. The major active species was determined by radical quenching experimental results with employing different scavengers. In this article, designates that the metal-free hybrid hetrojunction photocatalyst was a hopeful material in the waste-water control.

CUSTOMER PERCEPTION TOWARDS E- BANKING SERVICES AFTER COVID19

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ABSTRACT

The Indian banking sector embarked on the digital transformation journey a few years ago. While the initial objective may have been to counter the competition of new-age players, pushing banks to adopt digital technology. It is important not only to handle the COVID-19 crisis, but also prepare for post-crisis recovery. Since both urban and rural India have high mobile penetration and access to data, banks can look to expand digitally. Additionally, the present circumstances have increased familiarity with technology use among both bankers and customers. Banks can work with technology providers or create their own digital solutions to enable digital banking for their customers. The present paper focuses on Customer Perception towards E- banking Services after Covid-19.

Introduction

The corona virus (COVID-19) outbreak has snowballed into a major global crisis causing immense personal and financial suffering for consumers, communities, and businesses. The banking industry, in addition to facing its own challenges, is expected to help customers in this hour of need. While banks have well-defined business continuity plans, they may be inadequate in handling a crisis of this scale and address the large number of varying challenges that emanate from the situation. RBI urges customers to use digital banking facilities amidst pandemic covid-19. Indian banks are already online with some core banking functions. They can target an entire transition by digitization of all their functions, processes and systems. Legacy Indian banks and financial institutions will also verify collaboration with the new entrants and Fin Tech.

Recent Trends in Banking after Covid-19

Mobile wallets, on demand banking apps and the new trend of digital assistants like SIRI, ALEXA are at the forefront of mobile banking wave. Consumers who act as prime movers of innovation are increasingly demanding and want self-service, personalization, and immediate assistance.

- **Voice payments:** Voice commands are making waves with global consumers and by 2020 nearly one-third of browsing searches will be screen less. Consumer are highly conscious of security concerns, banks have already introduced voice recognition as one method for two-way authentication. Fin tech is providing access to private banking through applications like Alexa and Siri.
- **Detecting frauds using big data:** As banks and financial institutions grow their revenue and expand services they run into heightened risk. Another significant trend in mobile banking can help fin-tech businesses safeguard their resources and protect their customers' identity. The use of big data engines enables banks and financial institutions to improve risk assessment processes and jump ahead of the competition by providing streamlined customer experience while reducing the impact of fraud With the help of big data, banks and financial institutions can extract and aggregate vast pools of customer data from a variety of sources, such as financial statements, mobile banking history, or even social media. This capability makes it possible for them to investigate every customer’s historical behaviour, identify common patterns, and develop a holistic view of each account. Based on that analysis, predictive models of fraud detection can be developed, which will raise the red flag whenever some irregularities are detected.

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Disparate structural changes in the titanium dioxide thin film coated on the *p*-type Si and porous silicon textures after gamma irradiation

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DNA interaction perspectives of sulphur containing Knoevenagel condensed copper(II) complexes: Molecular docking, DFT, anti-biogram and *insilico* assessment

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E-Banking Service Quality : A Study on Public Sector Banks in Virudhunagar District

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Abstract:

Technology has played a major role in today's current business world. The advancement in the Information Technology has changed the entire face of the banking practices nowadays. Information Technology has provided the competitive banking products to the customers. Banking industry around the world has rapid transformation over the last decade. The fastest growth and extensive use of the Internet in the marketing practices of business firms, service quality delivery through electronic platforms for electronic commerce becomes one of the most critical issues for marketers in the service sector. The purpose of this study is to find the effectiveness of electronic banking service quality and to know how much customers are adapted to electronic banking. This empirical study is based on primary data collected from the customers of public sector banks.

Keywords: Electronic Banking, Information Technology, Service Quality,

1. Introduction

The banking sector has been sustained growth its operation by making use of technology. The advancement of this technology, banks has adopted various systems to carry banking transactions easily and quickly. Nowadays Electronic banking is a very common service that is used by every person in a way or another for making transactions. It can be use of internet banking services, mobile banking, ATM services. Banks offers wide range of E-banking services. Service quality aims to serve the customers in a better way such that customer need is satisfied besides customer to attain complete satisfaction while using a particular service. The customer has a certain set of attributes in his mind with respect to a product or service. So service quality has become an important factor to determine the customer liking and disliking for a particular service.

2. Objective Of Study:

To examine the electronic banking service quality of public sector banks

3. Research Methodology :

Primary data method has been used for this study. It was collected through the interview schedule method. The 100 samples selected conveniently of the survey were people living in Virudhunagar District that have been users of electronic banking system of public sector banks for at least one year.

4. Results And Discussion :

Analysis of demographic portion of the questionnaire for the study is shown below:

EFFECT OF HATHA YOGA AND SURYA NAMASKAR ON SELECTED PSYCOLOGICAL VARIABLE AMONG AIR-FORCE MALE POLICE

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ABSTRACT

The purpose of the study was to find out the effect of hatha yoga and surya namaskar on selected psychological variable among air-force male police in virudhunagar. To this purpose of the study, sixty air-force male police in Virudhunagar, Tamilnadu, India were selected as subjects a random. The age of the subjects were ranged 35 to 40 years. The selected subjects were divided into three equal groups of twenty subjects each such as hatha yoga group (Group I), surya namaskar group (Group II) and control group (Group III). The hatha yoga group (Group I) underwent selected asanas. The surya namaskar group (Group II) underwent 12 postures purpose for five days per week for twelve weeks. Group III acted as control in which they did not undergo any special training programme apart from their regular activities. All the subjects of three groups were tested on selected criterion variable such as job satisfaction at prior to and immediately after the training programme by questionnaire for job satisfaction method respectively. The analysis of covariance (ANCOVA) was used to analysis the significant difference, if any between the groups separately for each variable. The level of significance to test the 'F' ratio obtained by the analysis of covariance was tested at 0.05 level of confidence, which was considered as an appropriate. The results of the job satisfaction. Significant changes on selected criterion variables were also noticed due to job satisfaction.

INTRODUCTION

Job satisfaction describes how content and individual is with his or her job. The happier people are within their job, the more satisfied they are said to be. Every human being wants joy, peace, happiness and love. For this they are blindly and desperately running after money and power. They will probably obtain the last two, but on the way unknowingly sacrifice the first four. That is why despite power and money they face sorrow, stress, disappointment and ill health. To maintain a perfect equilibrium between the body and mind is called "the science and art of living" with the required amount of stress called eustress. In our police people have lot of work pressure, poor concentration of health and family attachment, lack of sleeping and stressful mind.

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CUSTOMER'S LEVEL OF SATISFACTION TOWARDS SERVICE AND SERVICE QUALITY OF STATE BANK OF INDIA – SPECIAL REFERENCE TO MADURAI CITY

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ABSTRACT
Banking sector is a highly developing sector in India, service sectors which is are highly depends on the customer satisfaction, main objective of this study is to know the level of satisfaction towards service provided by State bank of India for this purpose sample of 95 was collected using convenience sampling method, questionnaire has been used to collected data from the respondents, SPSS has been used to find statistical significance.

Key words: Banking, Customer Satisfaction, Satisfaction, Service, SBI.

INTRODUCTION
Banking sector is a developing sector in India, nowadays banking sector highly focused on the customer retention than customer acquisition, customer relationship management is a major tool which helps the banking companies to attract and retain customers. Customer satisfaction is essential to retain customers. State bank of India (SBI) is a well-known public-sector bank in India, they providing banking and investment services to their customers, to encourage customer loyalty bank should deliver high quality of services at lower cost. In this study an attempt has been made to know the level of satisfaction towards services provided by state Bank of India with special reference to Madurai city.

Objectives of the Study
- To study the level of satisfaction towards services provided by SBI.
- To understand the level of service quality.

Need of the Study
The study was conducted to know the customer satisfaction regarding service provided by SBI for the customers. The study totally revolves around the opinions and feedback from the users. An opinion survey with the help of questionnaire was conducted to know the users view on the services provided by SBI in Madurai.

Limitations of the Study
- There may be a bias in collecting the primary data from the customers.
- The study is limited to 95 respondents.
- The study is conducted only in Madurai city.

RESEARCH METHODOLOGY
Reliability and Validity: The validity of a research depends on systematic method of collecting the data and analysing the same in a sequential order. Methodology presents International Journal of Multidisciplinary Research and Modern Education the Sampling design, Data sources, Tools for data collection, Construction of questionnaire, Pilot study and the Frame work of analysis.

Area of the Study
The survey was conducted with customers of SBI Madurai city main branch .

Data Sources
The primary data was collected through field survey in the study area. First- hand information's pertaining to the benefits derived and the various competencies encountered were collected from 95 customers to know about activities towards project level of satisfaction on various service provided by the bank.

Tools used for Collection of Data
Framework of Analysis
- Frequency analysis
- Chi square analysis

EFFECTS OF FORMAL STRATEGIC PLANNING ON FINANCIAL PERFORMANCE IN INDIAN RAILWAY CATERING TOURISM CORPORATION

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ABSTRACT

Indian Railway Catering and Tourism Corporation as a public sector undertaking under the Ministry of Railways was setup in 1999 with the objective of professionalizing catering services and promoting domestic and international tourism. It has since then grown manifold and diversified its objectives beyond catering and tourism services. IRCTC has launched various tourism products and services for promotion of tourism industry in India. It is best known for changing the face of railway ticketing in India. Indian Railway Catering and Tourism Corporation Ltd. (IRCTC) is a Public Sector Enterprise under Ministry of Railways. IRCTC was incorporated on 27th September, 1999 as an extended arm of the Indian Railways to upgrade, professionalize and manage the catering and hospitality services at stations, on trains and other locations and to promote domestic and international tourism through development of budget hotels, special tour packages, information & commercial publicity and global reservation systems. While discharging its mandate, the Company has made a significant mark in its passenger-services oriented business lines like setting up of Food Plazas on Railway premises, '*Railneer*', Rail Tour Packages and Internet Ticketing' bringing great deal of professionalism into the operations. In addition to above, IRCTC is managing on Board Catering Services in *Rajdhani / Shatabdi / Duronto* and Mail / Express Trains and Static Catering Units such as Refreshment Rooms, AVMs, Book Stalls, Milk Stalls, Ice Cream Stalls, *Petha & Peda* Stalls etc. across the Indian Railway Network.[1]

***Keywords**: Finance, Assets, Shareholders fund*

FINANCIAL PERFORMANCE ANALYSIS

Financial performance represents firm's overall financial health over a given period of time. Financial performance analysis is the process of determining the operating and financial evaluation of a firm from accounting and financial statements. The goal of such analysis is to determine the efficiency and performance of firm's management, as reflected in the financial records and reports. Financial evaluation will examine the data enclosed inside financial statements with the aim to facilitate valuable information to aid in management decisions. A company's accounts and statements contain a great deal of information. Exploring the full connotations enclosed inside the statements lies at the heart of financial analysis. Overall, a central focus of financial analysis is evaluating the company's ability to earn a return on its capital that is at least equal to the cost of that capital, to profitably grow its operations, and to generate enough cash to meet obligations and pursue opportunities.

REVIEW OF LITERATURE

Sathyanarayana S, Sumithra Sreenath, and Swathi Shanbhag (2017) in their study have proposed a model for IRCTC with quality dimensions such as tangibility, empathy and reliability to boost service quality and overall performance. Thus the railways can to win the customers loyalty. As the results of the current study indicates

[1]https://www.quora.com/What-is-the-function-of-IRCTC

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Effects of substrate temperature on structural and optoelectronic properties of SnSe thin films by nebulized spray deposition for solar cell applications

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Electrochemical recovery of H_2 and nutrients (N, P) from synthetic source separate urine water

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Ethical Philosophy of Indian Business in Covid Pandemic

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Abstract:

Man as a social animal started living in groups to ensure safety and thereby peace in his life by helping others. Having these basic concepts in mind, the people in India, with long tradition and rich values, formulated and practiced in their life sound philosophy in doing business abide by the ethical principles. COVID 19 pandemic witnessed today, as a result of unscrupulous economic, political, social and cultural moves, made every one of us to look back the Indian philosophy of doing business This research paper based on the desk research and survey enumerates the methods of doing different business activities based on Indian philosophy of doing business to successfully transform current business practices keeping in mind the safety and peace of every one of the living creatures. The current economic, political and social scenario challenged significantly the successful conduction of business in this COVID pandemic. Having closer rapport with customers, adopting unified efforts of businessmen of the industry, following the safety measures advised by medical team, support from government and other research organisations shall be a definite solution to the small and scattered business organisation to work and become successful.

Key words : Ethical Philosophy, Virus, Sustainability,

Introduction:

Lives in the world wish to lead their life cheerfully and peacefully. Man as a social animal started living in groups to ensure safety and thereby peace in his life by helping others. Having these basic concepts in mind, the people in India, with long tradition and rich values, formulated and practiced in their life sound philosophy in doing business abide by the ethical principles that care for every one of the stakeholders, namely, manufacturers, marketers, customers, government and other lives in our mother Earth. COVID 19 pandemic witnessed today, as a result of unscrupulous economic, political, social and cultural moves, made every one of us to look back the Indian philosophy of doing business for others with the help of others but for the benefit of everyone involved. This research paper based on the desk research enumerates the methods of doing different business activities based on Indian philosophy of doing business, impact of COVID pandemic, readiness of people in adopting Indian business systems, difficulties in following those methods and suggest measures to successfully transform current business practices keeping in mind the safety and peace of every one of the living creatures.

Ethical Philosophy of Indian Business:

Business, simply defined as a state of being busy, includes every effort undertaken by an organised group of people systematically to earn money by providing goods and services needed by others with right quality, for right price and at right place. The traditions of India, having faith in the positive attitude and noble deeds of caring others, preach the adoption of ethics in every walk of life of us with a fear for God / Nature. The ethical philosophy of Indian way of doing business advocates the following measures in doing business:

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Original article

Exploring antifungal activities of acetone extract of selected Indian medicinal plants against human dermal fungal pathogens

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ABSTRACT

A broad spectrum of medicinal plants was used as traditional remedies for various infectious diseases. Fungal infectious diseases have a significant impact on public health. Fungi cause more prevalent infections in immunocompromised individuals mainly patients undergoing transplantation related therapies, and malignant cancer treatments. The present study aimed to investigate the *in vitro* antifungal effects of the traditional medicinal plants used in India against the fungal pathogens associated with dermal infections. Indian medicinal plants (Acalypha indica, Lawsonia inermis Allium sativum and Citrus limon) extract (acetone/crude) were tested for their antifungal effects against five fungal species isolated from skin scrapings of fungal infected patients were identified as including Alternaria spp., Curvularia spp., Fusarium spp., Trichophyton spp. and Geotrichum spp. using well diffusion test and the broth micro dilution method. All plant extracts have shown to have antifungal efficacy against dermal pathogens. Particularly, *Allium* sativum extract revealed a strong antifungal effect against all fungal isolates with the minimum fungicidal concentration (MFC) of 50–100 μg/mL. Strong antifungal activity against Curvularia spp., *Trichophyton* spp., and Geotrichum spp. was also observed for the extracts of Acalypha indica, and Lawsonia inermis with MFCs of 50–800 μg/mL respectively. The extracts of Citrus limon showed an effective antifungal activity against most of the fungal strains tested with the MFCs of 50–800 μg/mL. Our research demonstrated the strong evidence of conventional plants extracts against clinical fungal pathogens with the most promising option of employing natural-drugs for the treatment of skin infections. Furthermore, in-depth analysis of identifying the compounds responsible for the antifungal activity that could offer alternatives way to develop new natural antifungal therapeutics for combating resistant recurrent infections.

1. Introduction

Universally, humans are co-habiting earth with plentiful ecosystems comprises of various classes of microorganisms that may be beneficial or harmful to them. However, humans are evolved in such a way that their inherent innate immune system protects the body from harmful pathogens. It is well known that our human skin is featured to have abundant diversified groups of microorganisms ranging from bacteria, fungi to parasites. Such colonies of microorganism particularly fungi are forming a commensal relationship with human skin (Hurabielle et al., 2020). Thus, fungi contribute to play a role of an essential member of

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Extra-Durable Hybrid Supercapacitor Based on Cobalt Sulfide and Carbon (MWCNT) Matrix Electrodes

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Factors Influencing Investor's Perception Towards Mutual Funds In Tamil Nadu: A Study

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Abstract: In India, retail investors generally depend on the information that provides neither inflation hedges nor positive absolute returns. Millions of investors have acquired new insights thanks to mutual funds, which have taken investment to their doorstep. A mutual fund is an investment vehicle that pools money from several different investors and invests it in stocks, shares, short-term money market instruments, other securities or properties, or a combination of these. The primary motivation for investing in mutual funds is to earn a decent return with low risk. As a result, mutual fund success is largely the result of skilled fund managers' combined efforts and diligent investors. It is critical to understand mutual fund investors' needs and their preferences for mutual fund schemes, and their performance assessment in the current environment. This research aims to examine how investors in Tamil Nadu perceive mutual funds as an investment choice. A survey of over a hundred professional Tamilnadu investors is currently underway. A structured questionnaire was used to collect data, and descriptive statistical methods such as demographic analysis with simple percentages, rotation component matrix, and ANOVA test were used to analyze it. According to the results, age and marital status have no impact on investors' perceptions of mutual funds. Furthermore, factors such as benefits, Convenience, and reputation influence investors' purchasing behaviour. The research would benefit academics, market researchers, institutional investors, traders, distributors, and other potential investors.

Keywords: Mutual Fund, Investment Options, Investors' perception, Investment Factors

INTRODUCTION

In this era of globalization and competition, stocks' productivity is currently calculated by the industry's performance. Investors also like to invest only in the stock of companies from which maximum gains can be made. The growth of mutual funds has been prolonged since it began in emerging economies such as India, and progress towards the new mutual funds has taken a long time. The idea has been developed over the years, and investors have acquired an ever-increasing number of investment options through mutual funds. In the 18th century, mutual funds began initially as an investment avenue in the Netherlands, then in Switzerland, Scotland, and then in the United States in the 19th century. The idea of mutual funds came into being in India in 1960. The pioneer of Indian mutual funds is UTI.

Mutual Fund is considered a good investment option because it lets investors save and diversify their investments to a moderately priced stock portfolio. The core idea behind mutual funds is the need for a diversified investment solution and risk. Besides, small amounts of money can also be invested in the portfolio. It is continually evolving into a superior future that brings new opportunities to small investors. Any person with surplus money may invest in different mutual funds after their regular expenses have been met.

Investors had no investment opportunities in the early years of the growth of mutual funds. But modern stock market growth has provided investors with several options to invest their funds as needed. Various investors have different MFI objectives, and other types of MFIs have been developed. Investing in mutual funds is one of those networks. Over time, several new mutual funds have emerged. This, too, has changed the strategies and methods of selling these funds over time. However, the growth of the mutual fund has not stopped. Mutual funds have expanded exponentially in recent years. This research paper seeks to examine various factors influencing the perception of Tamilnadu investors.

NEED FOR THE STUDY

This research work was proposed to analyze and recognize key investor behavioural influences in selecting mutual funds. In previous research, there were several ways to study and interpret recent changes in investor behaviour and perception concerning demographics, investment targets, initial investment, etc., in terms of

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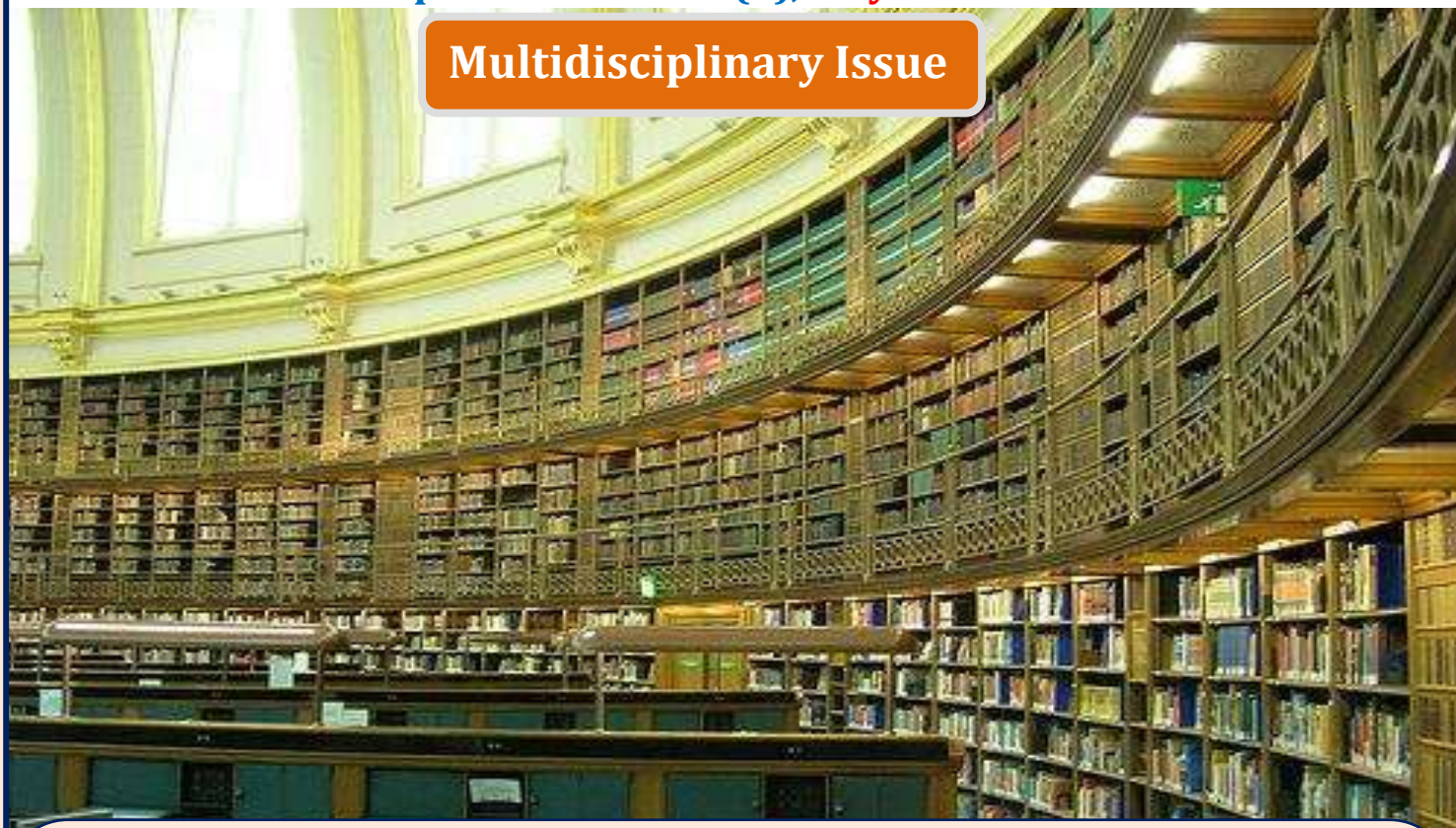

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INDEX

Functionalization of kaolin clay with silver nanoparticles by *Murraya koenigii* fruit extract-mediated bioreduction process for antimicrobial applications

Research | Published: 07 January 2021
Volume 57, pages 505–513, (2021) Cite this article

Journal of the Australian Ceramic Society

Aims and scope →

Submit manuscript →

M. Hariram, V. Ganesan, S. Muthuramkumar & S. Vivekanandhan

Abstract

The emergence of multidrug-resistant microbes and newly outbreaking diseases are one of the major threats before mankind. This paves the way for researchers to explore new antimicrobial agents that possess common day-to-day applications. In this concern, we have fabricated the antimicrobial Ag-kaolin functional nanostructures by simple and sustainable protocol employing *Murraya koenigii* fruit extract. UV-visible spectra (UV-Vis) of the Ag-kaolin exhibit absorption peak at 430 nm which corresponds to the characteristic surface plasmon resonance of Ag nanoparticles. X-ray diffraction pattern (XRD) shows the diffraction peak at 37.6° confirms their face-centred cubic nature with (111) plane. Furthermore, the formation of Ag-kaolin functional nanostructures was confirmed through a scanning electron microscope (SEM) and energy-dispersive X-ray spectrum (EDX) analysis. The transmission electron microscopic (TEM) studies reveal the effective formation of quasi-spherical monodispersed Ag nanoparticles having 20–30-nm diameters on the kaolin clay. The bio-synthesized Ag-kaolin nanostructures showed excellent antimicrobial activity against pathogenic gram-positive (*Staphylococcus aureus*, *Bacillus subtilis*) and gram-negative (*Escherichia coli*) bacteria respectively with the inhibition zones of 26 mm, 25 mm and 30 mm.

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Future of the Mobile Payment as Electronic Payment System

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ABSTRACT

The development of the Internet and the arrival of e-commerce fostered digitalization in the payment processes by providing a variety of electronic payment options including payment cards (credit and debit), digital and mobile wallets, electronic cash, contactless payment methods etc. Mobile payment services with their increasing popularity are presently under the phase of transition, heading towards a promising future of tentative possibilities along with the innovation in technology. In this paper, we will evaluate the current state and growth of mobile payments and other electronic payment systems in markets around the world and take a look at the future of this industry. We analyze various systems of electronic payment services, security issues related to them and the future of the mobile payment mode. This paper will also examines the factors affecting adoption of mobile payment methods by consumers. With all the security and convenience provided by mobile electronic payment method, we can expect further growth of mobile payments worldwide even surpassing payments made by credit and debit cards. However, there are several barriers identified to the adoption of this payment method; so certain measures should be taken to grant this industry a promising future ahead.

Keywords: e-commerce, m-commerce, Payment Systems, Mobile Payments, e-business

INTRODUCTION

In the year 1990, the advent of electronic commerce (e-commerce) introduced a unique way of doing trade business to the consumer and business world. Since then, e-commerce has grown and changed incredibly with producing extraordinary benefits for customers and business all around the world. With a large number of organizations conducting business this way, it has become evident that the field of e-commerce has a promising future ahead and businesses are going to obtain maximum benefit from it. Most of the popularity gained by e-commerce is due to its online perspective of doing business. It enables buying and selling of goods online, provision of various services and information on the internet and instant exchange of money between transacting parties. Using e-commerce, business payments have taken the form of exchanging money electronically and are called as electronic payments.

The electronic payment system is considered as the backbone of e-commerce and one of its most crucial aspects. It can be defined as a payment service that utilizes the information and communication technologies including integrated circuit (IC) card, cryptography, and telecommunication networks'. An efficient electronic payment system lessens the cost of trading and is thought to be essential for the functioning of capital and inter-bank markets. With the advancement of technology, electronic payment system has taken many forms including credit cards, debit cards, electronic cash and check systems, smart cards, digital wallets contactless payment methods and mobile payments and so on.

E-commerce has become a rapidly growing market today. With the proliferation of tablets and smartphones, the use of electronic payment methods has grown up to 21% in 2018. The use of credit cards was the major international means of online payment that dominated in a variety of transaction markets. It was estimated that 95% of all e-commerce transactions in the United States are performed using credit cards. Other widely used online payment alternatives are debit cards (with rising number of users worldwide) and online payment systems like Paypal, Stripe or Skrill. With the availability of a variety of electronic payment means including mobile payments, mediating services, and electronic currency, an appropriate option can be chosen for a particular type of transaction.

As we know that security is the main concern of people today while using any technology because the use of every technology is exposed to fraud, data theft, and stealing. It becomes more dangerous when the data contains significant financial information (Raja et. al., 2008). Thus, despite the fact that e-commerce is a growing field with an increasing use of its online payment services, its further development and widespread use in future are dependent upon the security and authentication stability of various electronic payment systems.

Materials Letters
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Green tea extract mediated biogenic synthesis of gold nanoparticles with potent anti-proliferative effect against PC-3 human prostate cancer cells

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Research Article

Haemocytes during Different Stages of Lifecycle in *Bombyx mori* (L.)

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ABSTRACT

Haemocytes in insects mediates the cellular responses like phagocytosis, encapsulation and clotting which signifies the immunological functions of any insect. In the domesticated variety of silkworm B.mori five types of haemocytes have been identified in all the stages. The most abundant cell was found to be plasmatocytes followed by Granular cells. Spherule cells and Oenocytoids were found to less during IV and V instars and least or absent in all other stages. Haemocytes found be to fluctuating before and after spinning. Plasmatocytes and granular cells decreased gradually with respect to number of days in pupa. The total haemocytic count increases gradually in the silkworm larval stages and found to be maximum at the last instar and least during adult stages where the role of haemocytes is not required because they die after laying eggs.

Keywords: *Haemocytes, Mulberry, Silkworm, Bombyx mori, Plasmatocytes, Granular cells.*

INTRODUCTION

Haemocytes are several types of cells which circulates within the haemolymph (Kerenap et al., 2005): in most of the insects they are well defined as Prohaemocytes, Plasmatocytes and Granulocytes and one more other types present in some other insects as coagulocytes Spherulocytes, Adipocytes and Oenocytoids (Nittono, 1960). Haemocytes are responsible for the cellular defense mechanism in the insect's immune system (Gupta & Sutherland, & Ribeiro & Brehlin, 2006) as a role to fight against the pathogens involving various physical chemical means were studied in arthropods (Ratcliffe et al., 1976 & Mead, 1986). Most of the haemocytes rest on the surface of various organs of the haemocoel and some cells circulate freely in the haemolymph. The number of cells varies greatly in the developmental as well as during different physiological stages (Wigglesworth, 1973) in the same species and total haemocyte count found to be more in larval stages than nymphal and adult (Webley, 1951).

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Environmental Research
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Hexavalent chromium removal from aqueous solutions using biogenic iron nanoparticles: Kinetics and equilibrium study

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Hydrothermally synthesized a pyrochlore-type bismuth stannate ($Bi_2Sn_2O_7$): Efficient electrochemical detection of nitroxoline

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IMPACT OF COVID-19 PANDEMIC ON WOMEN IN DIFFERENT RELIGION– A MICRO LEVEL EMPIRICAL STUDY

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Abstract

Globally, as well as more so in the context of India, one such major marginalized section seems to be that of 'women' and the lack of differential understanding of how the COVID-19 has impacted their lives remains neglected and a huge omission considering that women provide us with most of the informal care within families. More so, during crisis, women are more prone to risks due to gendered nature of the health workforce, which include women fighting the disease at the forefront, are subjected to limiting work and economic opportunities. Quarantine measures as a response to the disease have also put women at heightened risk of violence at home and cutting them off from essential protection services and networks, which they had prior to the imposition. This will further exacerbate gender inequality and become a source of stress on women's physical and mental health. Based on the above background this paper made an attempt on understand the impact of Covid-19 on Women in different religion in Virudhunagar, Tamil Nadu. The objective of the study are : i) to understand how women are affected differently as individuals and religions and ii) to recommend effective policies and interventions as a means to be prepared and prevent the outbreak by in cooperating women in the various processes.

The study aimed towards collecting data about the impact of Covid-19 among women on health, livelihoods and domestic violence in different religions. An in depth interview schedule is prepared for collection of data from women in different religion. A sample of 50 women respondents. Out of 50 respondents, 15 respondents are from Hindus, 18 respondents are from Christians and the remaining 17 respondents are from Muslims. The purposive sampling method is adopted for collections of primary data. The data are collected from the period of March 2021 to April 2021 in Virudhunagar, Tamilnadu. To verify the objectives, One Way ANOVA and Mean Plots are used.

Key Words: Impact of Covid-19, Covid-19 and women and Covid-19 and women in different religion

Introduction

Coronavirus or COVID-19 pandemic, which broke out in late 2019 in the Wuhan city of China has directly and indirectly affected each and every sphere of life across the world. Till date it has affected more than 3.9 million people with a death toll of 270,740 the world over. Coping with a pandemic medically is hard, but more difficult is to come out of the fear and panic it has causes and can cause to the victims. However, the fear caused by potentially falling victims to the disease can itself be an overwhelming experience as it stirs up people's emotions and sensitivities. Women are mostly the victims of such sensitivities. According to the Lancet report (2020), there has not been any gender analysis of the pandemic by any government of health organization or any estimates of potential victims in preparedness phases.

Plan International (2020) highlights that the COVID-19 has interrupted our way of life and has further disrupted individuals, families and communities putting them under stress of health and economic burdens. However, there are other reasons of stress caused by the COVID-19. In times when social isolation and

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Impact of Covid-19 towards organizational culture and challenges faced by employees in textile industry at Rajapalayam

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Abstract: *An organizational culture means values, beliefs, norms, system, habits, vision, environment etc. Organizational culture is the specific collection of values and norms that are shared by the people and groups in an organization and that control the way the employees interact with each other and with outside the organization. An organization culture consists of two primary components. The principal value of the organization and the existing management method and systems. A textile industry is a group variety of product producing like cotton, wool, and synthetic fibers. To run the industry, they want the employees help to attain the company goal. After the covid 19 both the organization and employees faced lots of problem. To overcome these problems organization should do alternative solution to employees introduced about a new organizational culture. This improves the organizational vision and goals. So, they have proposed to undertake this study to overcome the above issues.*

Key Words: *Employees, Covid 19, Textile industry, Organizational Culture.*

1. INTRODUCTION:

Organizational culture encompasses values and behaviors that "contribute to the unique social and psychological environment of an organization". According to Needle, organizational culture represents the collective values, beliefs and principles of organizational members and is a product of such factors as history, product, market, technology, strategy, Type of employees, management style, and national culture; culture includes the organization's vision, values, norms, systems, symbols, language, assumptions, environment, location, beliefs, and habits. Organizational culture is the specific collection of values and norms that are shared by the people and groups in an organization and that manage the way the employees work together with each other and with stake holders' exterior the organization. Organizational culture can be diagnosis from the point of view of its effect on the following six types of motives of people viz., achievement, affiliation, expert influence, control, extension and dependency. The textile industry is primarily concerned with the design, production and distribution of yarn, cloth and clothing. The raw material may be natural or synthetic using products of the chemical industry. The textile industry in India traditionally, after agriculture, is the only industry that has generated huge employment for unskilled labor in textiles. The textile industry continues to be second largest employment generating sector in India. In Rajapalayam also the main occupation is textile mills. Due to covid 19 pandemic most of the employees are affected by financial and mentally. Many of the industry have alternative option like work from home culture. But in textile industry there is no way to run like that. So, this industry has suffered more. After reopening of textile industry many changes are applied only 50 % of employees were allowed to work at that time it also affects both employees and organization. Many condition and changes are applied through the organizational culture. Culture through putting mask, social distance, half the number of employees, sanitizer, no direct meeting of higher authority, etc.

1.1. OBJECTIVE:

- To study the covid 19 organizational culture of the employees in textile industry.
- To study factors affecting the covid 19 organizational culture of the employees practiced in textile industry.

2. REVIEW OF LITERATURE:

Chadha, tushar (15 Apr 2020),[1] carried out their study on global outbreak of covid -19 presents a significant problem. However, amid its volatility, uncertainty, complexity and ambiguity lay hidden opportunities for learning, reinvention and evolution at the individual, organizational and societal levels. With the ongoing covid-19 pandemic,

[1] **Chadha, tushar " COVID – 19 : Impact on organizational culture" , BW people, 15 Apr 2020, bwpeople, businessworld.in/article/COVID-19- Impact-On-Organizational culture/15-04-2020-189253/**

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Original article

Impact of rhizobacterium *Bacillus sonorensis* on propagation of *Abelmoschus esculentus* and its antimicrobial activity

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Soluble sugar

ABSTRACT

In order to evaluate the impact of *Bacillus sonorensis* on propagation of *Abelmoschus esculentus* and its antimicrobial activity was investigated. In the present study, *A. esculentus* was cultivated in *B. sonorensis* inoculated soil and also assessed the morphological as well as biochemical parameters of crops. The culture inoculum of *B. sonorensis* influenced growth and yield of treated plant. The root (39.5 cm), shoot length (20 cm), chlorophyll (1.06 mg), carotenoid (0.445 mg), protein and total soluble sugar content, NR & starch activity were higher in bioinoculated treated plant than control. The fresh biomass and dry weight were drastically increased in bioinoculated plants when compared to control. Gradual increase in composition of pivotal nutrients (N, P, K) and minor nutrients were observed in the bioinoculated plants. The culture filtrate possessed phytopathogenic activity against different phytopathogens. Among the three different phytopathogens, the maximum zone of inhibition (21 mm) was noticed in *Aspergillus colletotrichum* infected plants. The fermentation study was carried out in pilot scale fermentor and the synthesis of plant growth promoting substance was found to be 30.00 mg/l IAA.

1. Introduction

Rapidly increasing human population and increasingly prevailing drought periods have led to deforestation and degradation of many ecosystems in the tropics, especially in India. The increasing population reflects on the environment, resulting in the destruction of biological productivity and biodiversity. Generally, the agriculture serves as a backbone for human population which fulfills the food supply (Pereira et al., 2020). Application of chemical fertilizer leads to soil pollution, contamination of ground water and threats to biodiversity because the gradual establishment of biomagnifications and eutrophication. The manufacture of quality food is due to maintain the supply of nutrients in sustainable compartment to make sure bio-safety. The innovative view of farm production attracts the growing demand of biological based organic fertilizers exclusive of an alternative to agrochemicals (Bhardwaj et al., 2014). In general, agriculture sector depends upon the fertility of soil, to enrich the supply of nutrients and to restore the nutrients in the field (Araujo et al., 2003).

Organic farming is one of the essential and important strategies to adopt food safety and also to maintain the biodiversity conservation (Megali et al., 2013). Biofertilizers from nature give a better yield, and beneficial to mankind by sustainable economic

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Insights of pharmacological effects on 2-aminopyrazine / pyrimidine derivative and their palladium complexes: Synthesis and biochemical perspective

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Article

Isolation, Expansion, and Characterization of Placenta Originated *Decidua Basalis*-Derived Mesenchymal Stromal Cells

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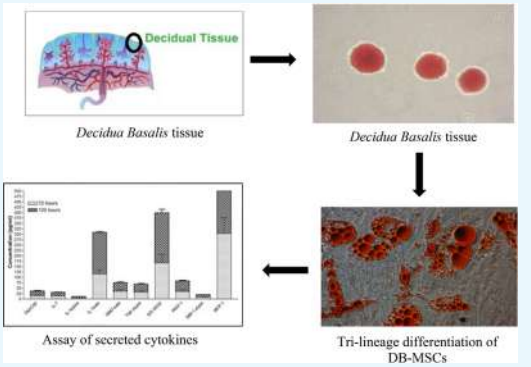
ABSTRACT: Mesenchymal stromal cells (MSCs) were isolated from *Decidua Basalis* (DB) and studied for their final cellular product measures, such as safety, purity, quality, quantity, and integrity that are ascribed as cellular products. This research aimed to isolate MSCs for expansion under the clinical scale level with potency, secretion of cytokines, growth factors secreted by DB-MSCs, and their role in wound healing. Placentas isolated from DB were expanded up to the 10th passage, and their characteristics were assessed by phenotypic characterization using a flow cytometer and analyzed for trilineage differentiation by cytochemical staining. Growth factors (GF), interleukins (IL), chemokines, and tissue inhibitors of metalloproteinases (TIMP) were measured with enzyme-linked immunosorbent assays. The harvested cells from the placenta yield 1.63−2.45 × 10^4cells/cm^2 at P(0), 3.66−5.31 × 10^4cells/cm^2 at P(1), 4.01−5.47 × 10^4cells/cm^2 at P(2), and 3.94−5.60 × 10^4cells/cm^2 at P(10) accordingly; up to 4.74 × 10^9 P(2) DB-MSCs were harvested within 9−11 days. The viability of the freshly harvested cells was greater than 90% in all cases. It is able to differentiate into chondrocytes, adipocytes, and osteogenic cells, proving their ability to differentiate into a trilineage. Thus, this study put an insight into a secure and conventional approach toward their ability to differentiate into multiple lineages and secrete factors related to immune regulation, making DB-MSCs a potential source in various therapeutic applications.



INTRODUCTION

Wound healing is accomplished through cellular homeostasis, inflammation, proliferation, and tissue remodeling by total physical and functional regeneration of injured tissue.[1−3] Furthermore, these metabolic processes are controlled by extracellular signaling pathways such as cytokines, growth factors, and membrane receptors.[4,5] However, wound curing is a usual biological process; chronic wound treatment frequently necessitates therapeutic intervention to provide a biochemical environment that promotes normal healing. To treat and control the complicated pathophysiology of chronic wounds, many therapeutic modalities are already available.[6] Among those, biophysical practices like electro-physical stimulation, recombinant growth factor therapy, platelet rich plasma treatment, and stromal cell based treatment are very common.[7,8] Particularly, the wound healing process is a multimodal strategy that stimulate signaling response; then, the replacing growth factors or targeting particular processes like angiogenesis or proliferation are more likely to provide therapeutic advantages.

Placental membranes, the earliest known biomaterials utilized for wound healing, are one such technique. Placental membranes have been shown to have good clinical effectiveness as well as a minimal treatment cost.[9] Extra-embryonic tissue gives rise to placental membranes. A fetal component (the chorionic plate) and a maternal component (the *Decidua Basalis*) make up this tissue.[10−12] Human-derived *Decidua Basalis* has been found to help heal chronic wounds in riffle clinical trials and recent *in vitro* investigations due to their capacity to produce cytokines and impact on cell propagation, angiogenesis, and exodus.

Here, we optimized the utilization of *Decidua Basalis*-derived mesenchymal stromal cells (DB-MSCs) for wound healing and therapeutic purposes, which, on the other hand, is dependent on their subsequent large-scale *in vitro* growth. To address clinical demand and biological research demands, a rapid and effective methodology for producing large amounts of DB-

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Journey Towards Self-realization in Nadine Gordimer's *The Pickup* and Khaled Hosseini's *The Kite Runner*: A Comparative Study

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Let us go to another country

Not Yours or mine

And start again…

The rest is understood

Just say the word. (William Polmer)

Abstract

The Prolific South African novelist, Nadine Gordimer's *The Pickup* (2001) and the promising Afghan writer, Khaled Hosseini's *The Kite Runner* (2003) belong to New Literatures in

Keggin-Type Heteropoly-11-molybdo-1-vanadophosphoric Acid Supported on Montmorillonite K-10 Clay as a Catalyst for the Synthesis of Indeno[1,2-*b*]quinolinones: A Solvent-Free Approach

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Quinolines have long been known for their abundant biological activities, including antiplasmodial, cytotoxic, antibacterial, antiproliferative, antimalarial and anticancer properties.[1,2] Consistent with their versatility, they behave as useful ligands for the preparation of organic light-emitting diode phosphorescent complexes.[3,4] In this paper, we focus on the synthesis of indeno[1,2-*b*]quinolinones by the condensation reaction of 1,3-diones, amines and aldehydes (Schemes 1 and 2). We were in part motivated by recent reports on this condensation in the presence of a variety of catalytic materials.[5–14] Although useful in their own right, some of these reports include operational procedures with lengthy reaction times, low yields, or the use of expensive catalysts; and we sought a simple method with green characteristics. For this, we considered the catalytic activity of Keggin, Dawson and Preyssler-type heteropoly acid (HPA), due to their low volatility, low corrosiveness, and high activity.[15–19] The classical disadvantages of an HPA are its low surface area (1–10 m^2/g) and the problem of separation from the reaction mixture. These can be remedied when the HPA is supported on clay materials and used in the reaction as a heterogeneous catalyst. Recently we have reported the catalytic applications of HPA supported on clay materials for the synthesis of a number of heterocycles.[20–23] The present work demonstrates this approach for the synthesis of indeno[1,2-*b*]quinolinones *via* the one-pot three-component condensation reaction of 1,3-indanedione, naphthylamines and substituted aldehydes under solvent-free conditions at 100 °C using the HPA heteropoly-11-molybdo-1-vanadophosphoric acid, $H_4[PVMo_{11}O_{40}]$, supported on montmorillonite K-10 clay as a catalyst. The catalyst is abbreviated as PVMoK-10 (see Experimental section). On a 1 mmole scale, using 50 mg of catalyst, the reaction was typically complete within one hour, with yields in the range of 67–72%. Our preparative results are summarized in Tables 1 and 2. We note that yields were not particularly sensitive to the nature of the substituent groups on the aldehyde unit. During work-up, the catalyst was readily separated from the product and could be re-used.

Keggin-type heteropoly-11-molybdo-1-vanadophosphoric acid supported montmorillonite K-10 clay-catalysed one-pot multi-component synthesis of chromeno[2,3-b]indoles

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Prasanna Antony Muthu, Kumaresan Murugan, Swaminathan Meenakshisundaram & Sami Ponnusamy

Abstract

One-pot three-component synthesis of twelve different chromeno[2,3-*b*]indole derivatives were achieved by the condensation of β-naphthol, oxindole and various substituted aldehydes. Two more chromeno[2,3-*b*]indole derivatives were also synthesized through one-pot two-component condensation of salicylaldehyde with oxindole/chlorooxindole. Both the condensations were achieved by using Keggin-type heteropoly-11-molybdo-1-vanadophosphoric acid, $H_4[PVMo_{11}O_{40}]$ supported on montmorillonite K-10 clay for about 10% as catalyst under environmentally benign solvent-free reaction condition. Shorter reaction time, excellent yield of product, sustainability of catalytic material and simple workup procedure under green experimental conditions are the advantages of this protocol.

PalArch's Journal of Archaeology of Egypt / Egyptology

LASALLIAN PEDAGOGY: TRANSFORMATIONAL EDUCATIONAL PRACTICES AMIDST COVID 19 PANDEMIC.

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A. Brickston , Dr. A. Baskar , Lasallian Pedagogy: Transformational Educational Practices Amidst Covid 19 Pandemic. , Palarch's Journal Of Archaeology Of Egypt/Egyptology 18(7). ISSN 1567-214x.

KeyWords: Corona, Lasallian, Pedagogy, COVID-19, Online, Virtual classes.

Abstract:

This pandemic plight has locked the whole world inside four walls and caused futuristic, adventurous inventions that haven't spared the field of education also. This scientific paper denotes how educators of the Lasallian world are facing challenges to bring education back to the children through their innovations. The primary focus on this study is to help the lasallian educators to know the transformational educational practices during Covid 19 pandemic. This epidemic has challenged Lasallian Educators too, who have been transforming the lives of their pupils for the past three hundred years through their well-known Lasallian Pedagogy in seventy nine countries around the world .

Introduction :

The world is facing a kind of situation in which Aristotle's thought that "Man is by nature a social animal; an individual who is unsocial is naturally either a beast or a God" is being questioned today. Today, 1.5 billion children are away from existing school systems, stuck in front of the digital screens, lacking direct guidance of their mentors. Faith formation and behavioural formation becomes undoubtedly challenged. Online Education is considered a necessary evil but the other parts of the world perceive it as an opportunity for new evolution in the Educational system[1]. Every Lasallian educator is challenged to consider the following question: "Can Lasallian Pedagogy be active in this crucial situation?" This paper will bring out challenges and findings of how

Kalyan Bharati

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LEVEL OF FINANCIAL LITERACY AMONG WOMEN (A STUDY WITH SPECIAL REFERENCE TO VIRUDHUNAGAR TOWN)

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ABSTRACT

In recent decades financial products and services have become gradually predominant throughout society. Earlier generations may have purchased goods mainly in cash whereas today various credit products are popular, such as credit and debit cards and electronic transfers. Other products, such as mortgages, student loans, health insurance and self-directed investment accounts, have also developed in significance.This has made it even more essential for individuals to be aware of how to use them sensibly. Given the significance of finance in modern society, lacking financial literacy can be very harmful to an individual's long-term financial success.Without financial literacy, the events and decisions one formulates or do not make with respect to savings and investments would lack a strong foundation. Hence this study attempts to assess the level of financial literacy among women.

The main objectives of this study are

- To study the importance of financial literacy.
- To present the socioeconomic profile of the sample respondents in the study area.
- To assess the level of financial literacy of the respondents.
- To analyse the factors influencing the financial literacy of the respondents.
- To offer suggestions on the basis of findings of the study.

The present study is based on both primary and secondary data. Primary data have been collected from 140 respondents in Virudhunagar town who were selected by convenience sampling method. The collected data were edited, tabulated and analysed for the purpose of presentation.Secondary data have been collected from various journals, books and websites.

INTRODUCTION

In recent decades financial products and services have become graduallypredominant throughout society. Earlier generations may have purchased goods mainly in cash whereas today various credit products are popular, such as credit and debit cards and electronic transfers. Other products, such as mortgages, student loans, health insurance and self-directed investment accounts, have also developed in significance.This has made it even more essential for individuals to be aware of how to use them sensibly.Besides, the economic growth and development ofnation are highly influenced by the financial decisions taken byindividuals.Financial literacy is the ownership of the set of skills and knowledge that allows an individual to make informed and effective judgments with all of their finance.

STATEMENT OF THE PROBLEM

Given the significance of finance in modern society, lacking financial literacy can be very harmful to an individual's long-term financial success.Without financial literacy, the events and decisions one formulates or do not make with respect to savings and investments would lack a strong foundation. Financial literacy

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LIVELIHOOD AND PSYCHOLOGICAL WELL-BEING IMPACT OF COVID – 19 LOCK DOWN PERIOD ON DAILY WAGE EARNERS

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Abstract

Strict lockdown restrictions halted most economic activities and caused millions of daily wage earners to lose their employment opportunities and revenue streams. Information compiled by the Centre for Monitoring Indian Economy showed that the unemployment rate in both rural and urban areas rose sharply in late March. It remained relatively high in April, before showing signs of improvement starting in May when some activities resumed. According to the media report on a national level, India publishes a periodic labor force survey over 12-month periods. In the latest figures released for the fiscal year 2018-2019, data showed the unemployment rate fell to 5.8% from a more than four-decade high the previous year. Based on the above background the objective of the study are i) to analyses the basic profile of the daily wage earners in the study area ii) to trace out the impact of lockdown on livelihood of daily wage earners and iii) to study the consequence of lockdown on the psychological well-being of daily wage earners.

The data was collected by administering interview schedule to the targeted population. Enough care was taken to the obtain information respecting in the characteristics of the population following a purposive sampling technique. The data were collected from 50 respondents those who are working as daily wage in virudhunagar Bazar. Simple percentage analysis, PHQ 9 Mood scale technique and Garret Ranking Technique were used to analyze the objectives. At the end of the paper conclusion were drawn based on findings.

Key Words : lockdown period, Daily wage earners, livelihood, Depression

INTRODUCTION

Outbreak of Covid – 19 lockdown period, and nationwide unprecedented lockdown has brought a grinding halt to economic activities which adversely affecting the life and livelihood daily wage workers. They have to struggle to safeguard themselves from lockdown period threat and to fight for survival due to loss of livelihood. Since the time of Covid-19 lockdown, there has been a severe crisis of employment opportunities in local labour markets. Disadvantaged social groups have been most affected by the novel coronavirus outbreak due to lack of education and employment, according to The Indian Statistical Institute. According to the ILO report around 400 million people working in India's informal economy might sink deeper into poverty.

Strict lockdown restrictions halted most economic activities and caused millions of daily wage earners to lose their employment opportunities and revenue streams. Information compiled by the Centre for Monitoring Indian Economy showed that the unemployment rate in both rural and urban areas rose sharply in late March. It remained relatively high in April, before showing signs of improvement starting in May when some activities resumed. According to the media report on a national level, India publishes a periodic labor force survey over 12-month periods. In the latest figures released for the fiscal year 2018-2019, data showed the unemployment rate fell to 5.8% from a more than four-decade high the previous year.

The Covid -19 pandemic and the resulting lockdown have negatively affected daily workers mental health and created new difficulties for people already suffering from mental illness and substance depression severity. As the acute crisis upends almost all aspects of society, daily wage workers shoulder the burden of systematic unpreparedness.

STATEMENT OF THE PROBLEM

The Covid -19 lockdown period has led to great implications on daily wage earners. There is a significant amount of income loss for households and struggle for their livelihoods which has further compounded into threating them into severe poverty and ill health. The current Covid -19

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Menstrual Sanitation: A Google form questionnaire-based study

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Abstract

This learning defines and compares girls' knowledges of menstruation in VHNSN College, Virudhunagar, Tamilnadu at the decision of a measured trial of puberty tutoring and sanitary pad facility to clarify pathways of effect in the interventions. Google form were distributed with girls who participated in the Menses surveys. The managing of menses has come to the fore as a barrier to girls' education achievement in low-income backgrounds. Therefore, this study is concerned with evaluating the menstrual sanitation.

Keywords: *Menses, Sanitary pad, Google form*

Introduction

Adolescence is measured to be the period between 10 to 19 years of age. The teen-age experiences not only physical development but also emotional, psychological, social and intellectual changes. On one occasion the female gamete (ovum) matures it will release from the ovary and travel through the fallopian tube into the womb. If the ovum is not fertilized by the male gamete (spermatozoa), it will disintegrate and blood loss resulting in an ejection through the vagina. Bleeding also known as "Menses". The first period usually begins between 12 to 15 years of age, a point in time known as menarche (Pratiksha Puranik and Jayashree Dhote, 2020).

Puberty is the period of human development during which secondary sexual features appear, sexual maturation occurs and reproductive capacity is attained. Ovulation begin in girls during this period (Rosenfield *et al*., 2014). Reproductive health is an important issue for female students as adults who must be healthy reproductively. As teenagers, they have experienced various changes, marked by secondary sex growth, such as breast enlargement, hair growth around the genitals, and eventually menstrual blood outflow. Menstruation is the decay of the endometrium of the uterus that contains many blood vessels, where it occurs every month (National Population & Family Planning Board, 1998).

Detoxification

Metal-free and stable dye-sensitized polymer matrix for the detoxification of antibiotic drug levofloxacin under visible light illumination

M. Gayathri, P. Senthil Kumar, M. Santhameenakshi & S. Karuthapandian

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ABSTRACT

Herein, we developed novel malachite green (MG), crystal violet (CV), methyl orange (MO) sensitized Polymethylmethacrylate (named as MG@PMMA, CV@PMMA, and MO@PMMA) through the simple solution casting method. The successful formation was confirmed by various analytical and spectroscopic techniques. For the first time, the as-prepared MG@PMMA, CV@PMMA, and MO@PMMA were utilized as photocatalysts for the degradation of levofloxacin (LEV) drug under visible light. The UV–visible spectroscopy results revealed that the above 90%, 94%, and 95% of LEV degradation efficiency was achieved over MG@PMMA, CV@PMMA, and MO@PMMA, respectively. Furthermore, the dye-sensitized PMMA matrices demonstrated good repeatability and reusability even after the fifth usage.

KEYWORDS: Antibiotics | photodegradation | dye | visible light

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Short communication

Microbial synthesis of silver nanoparticles using *Lactobacillus plantarum* for antioxidant, antibacterial activities

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MUDRA: PROBLEMS OF WOMEN ENTREPRENEUR - AN ANALYTICAL STUDY

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ABSTRACT

MSME very well covers those self employed / own account entrepreneurs and household enterprises that organize the economic activity at a very low scale and in an informal manner. There are number of issues related to women entrepreneur, among them a consolidated view towards the problems faced by women entrepreneurs becomes important to track the most important problems. Hence, the main objective of the study is to analyze the problems faced by the women entrepreneurs in MSME in Virudhunagar district of Tamilnadu. A sample of 100 women respondents were selected those who borrowed loan under MUDRA scheme during January 2019 to June 2019 in Virudhunagar district of Tamilnadu. Stratified random sampling method was adopted to collect data. Unless the beneficiary problems cannot be solved under the schemes in place, there is not any purpose of bringing one in the system.

Key Words: MUDRA, Women Entrepreneur and problems of Women

INTRODUCTION

MSME have direct implication on development of entrepreneurial ventures and diversification of industrial sector. MSME sector encompasses entire non-agricultural segment of National Economy. MSME Act, 2006 brought together varied set of industrial activities hitherto classified under Small Scale Industries (SSI), Small Scale Business Sector Enterprise, Village and Cottage Industries to make MSME highly heterogenic in nature. This sector now encompasses all kinds of non-agricultural activities from a very small village, town to metro Politian cities. The heterogeneity of this sector is reflected in different features enterprises like in the size of business which may operate in different markets (rural, urban, local, regional, national and international), with varied level of skills, capital, sophistication and with different kind of growth orientation in organized or unorganized sector of the economy.

MSME very well covers those self employed / own account entrepreneurs and household enterprises that organize the economic activity at a very low scale and in an informal manner. The role of MSME becomes more inclusive when it becomes an instrument to transform the economic status of few special segments of the society like women workforce, unemployed youth, SC/STs, physically challenged people and some traditional industries like handicraft etc.

This study focuses on one such segment i.e. women entrepreneurs. In India 26.61 lakhs of women owned enterp rises forms 7.36% per cent of total MSMEs (MS ME,2014-15) which contributes to 3.09 per cent of industrial output and gives employment to about 8 million people. Statistically 98 per cent of women-owned enterprises are micro-enterprises as per this report. There are number of issues related to women entrepreneur, among them a consolidated view towards the problems faced by women entrepreneurs becomes important to track the most important problems. Hence, the main objective of the study is to analyze the problems faced by the women entrepreneurs in MSME in Virudhunagar district of Tamilnadu.

The remaining part of the this study is organized as follows: After a brief introduction in Section –I, Data and methodology are outlined in Section – II, Section – III presents the analysis and findings of the study and Section – IV gives conclusion of the study

DATA AND METHODOLOGY

A sample of 100 women respondents were selected those who borrowed loan under

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Natural clay loaded Sm_2MoO_6 nanocomposite, a green catalyst, for multiple applications

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The Non-Neighbor Harmonic Index on Elementary Graph Operations

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***Abstract*—**The aim of this paper is to study the behaviour of non-neighbor harmonic index of graphs with respect to the removal of pendant edge and an edge with maximal weight. The non-neighbor harmonic index for the subdivision graphs are computed and discussed in detail.

Keywords— non-neighbor harmonic index, elementary graph operations, subdivision graphs.

I-INTRODUCTION

To bring the power of mathematics to bear on real-world problems, the problem should be first modelled mathematically. Graphs, representatives of mathematics, are remarkable versatile tools for modelling. Graph theory is largely applied to the characterization of chemical structures, as well as to qualitative and quantitative structure-property (QSPR) and structure-activity (QSAR) relations by means of certain numerical characteristics, the topological indices [1]. A single number that can be used to characterize some property of the graph of a molecule is called a topological index. Many topological indices [2,3] have been introduced and studied: Randic index [4], Wiener index [5], First and Second Zagreb indices [6] are a few examples of these concepts. Many mathematical properties of these graph invariants have been studied.

In this paper we are concerned with simple graphs, having no directed or weighted edges, and no self-loops. A graph G is an ordered pair of two sets V and E. The set $V = V(G)$ is a finite non empty set and $E = E(G)$ is a binary relation defined on V. A graph can be visualized by representing the elements of V by vertices and joining the pair of vertices u, v by an edge if and only if $uv \in E(G)$. Also we denote $|V(G)| = n$ and $|E(G)| = m$. The degree of the vertex $v \in V(G)$, written $d(v)$, is the number of first neighbors of v in the underlying graph G.

Graph operations produce new graphs from initial ones. They may be classified into elementary operations or advanced operations. Elementary operations or editing operations create a new graph from initial one by a simple local change such as addition or deletion of a vertex or of an edge, merging and splitting of vertices or edges. We define $G - uv$ to be the graph obtained from G by deleting the edge $uv \in E(G)$, and $G + uv$ to be the graph that arises from G by adding an edge uv between two non-adjacent vertices u and v of G. The subdivision graph *S(G)* is the graph obtained from G by replacing each of its edge by a path of length 2, or equivalently by inserting an additional vertex into each edge of G. We use S_n, P_n and K_n to denote the star, path and complete graph on n vertices, respectively. For undefined terminology and notations in the paper, we refer to [7].

The paper is organized as follows, Section I contains the introduction of topological indices, graphs and elementary graph operations. Section II contain the related work of harmonic index and non-neighbor harmonic index, Section III presents the results and discussion of how the non-neighbor harmonic index of a graph G strictly increases and decreases by the removal of pendant edge [8] and an edge with maximal weight respectively. Also the non-neighbor harmonic index for the subdivision graph *S(G)* is computed for some graphs and the results are discussed in detail. Section IV concludes the research work with the scope for future.

II-RELATED WORK

In the 1980's, Siemion Fajtlowicz created a vertex-degree-based quantity which was re-introduced by Zhong [9] in 2012 called Harmonic Index [10]. The harmonic index is one of the most important indices in chemical and mathematical fields. The harmonic index gives better correlations with physical and chemical properties of molecules. It is defined as

Non-Neighbor Topological Indices of Generalized Prism Network

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***Abstract*:** Topological indices are designed for the transformation of a molecular graph into a number which characterize the topology of that graph. Networks are complicated graph structures which plays an important role in the field of engineering and physics. Topological indices can be used to understand the characteristics of different networks. Non Neighbor Topological Indices based on non-neighbors of the vertices of a graph is an emerging research concept in Chemical Graph Theory. In this research work, the Non-Neighbor Topological Indices of generalized prism network is computed.

Keywords: Non-neighbors, non-neighbor topological indices, generalized prism network.

AMS Mathematics Subject Classification (2010): Primary 05C12, Secondary 05C90.

I.Introduction

Chemical graph theory has a central role in the implementation of mathematical concepts, especially graph theory to Chemistry [1,7]. Graph theory has vast applications in diverse fields of Science and Engineering [5]. Topological indices are graph invariants used for the transfiguration of a structure or graph into a unique number which characterize the topology of that structure.

Topological indices are used in prediction of bioactivity of the underlined compounds. Topological indices of chemical graphs obtained by applying graph theoretical results give good correlation between the properties of these chemical compounds. Networks are complicated graphs obtained by implementing several operations on graphs.

Chemical structure can be represented by a graph whose vertices represent atoms and edges correspond to the chemical bonds. A graph $G(V,E)$ with vertex set $V(G)$ and edge set $E(G)$ is connected if there is a path between any pair of vertices in G. The number of vertices of G adjacent to a given vertex v is the "degree" of this vertex and is denoted by $d(v)$.

Materials Letters
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Novel puffball (*Lycoperdon* Sp.) spores derived hierarchical nanostructured Biocarbon: A preliminary investigation on thermochemical conversion and characterization for supercapacitor applications

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PERSONAL FINANCIAL PLANNING AND ITS IMPACT ON INVESTMENT DECISIONS – A STUDY OF RURAL AREAS OF VIRUDHUNAGAR DISTRICT, TAMIL NADU

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Abstract: The present study throws light on determining the impact of personal financial planning on investment decision of people living in rural areas of Virudhunagar district in Tamilnadu. From the data collected from 500 respondents, it was found that majority of the respondents are engaged in Agriculture and rest of the respondents are working in Spinning mills, Match works and Fireworks industries followed by other sources of income. The respondents were asked different questions related to personal financial planning to determine the impact of financial planning on investment decision of the respondents. This study also measured the relationship between personal financial planning and demographic factors like gender, income, age, education and occupation of the respondents using Chi-square test.

***Key Words**: Financial Planning, Personal Finance, Investment Decision, Demographic Factors.*

I. INTRODUCTION

The booming of personal financial planning has opened great interests in financial services industry. Personal financial planning is the process of managing one's money to attain personal economic satisfaction. Individual needs and goals change when he or she passes through different stages of life. Therefore, making personal financial planning is a vigorous process.

Finance is the backbone of everyone whether individual, corporate or government. All individuals, corporations and government require funds for operating their activities. However, an individual has to make adequate investment in their plan and direct those investments planned towards suitable vehicles to meet the desired goals and objectives. Therefore, a blooming financial and superior lifestyle is acquiring priority amongst individuals which resulted in the personal financial planning practice. Personal Financial Planning has assumed much importance in the recent years, since the financial markets have become increasingly multidimensional and as there is information disparity between markets and the common people as a result of which a person finds it very hard to take good and right financial decisions. It is a vital tool for promoting financial stability. Therefore, developed and developing countries are more focusing on programs for financial planning.

Investment Decision

Making financial decisions is a necessity and must for every individual in his life. Thus, the ability to manage personal finances has become progressively important in today's world. Investment decisions are usually concerned with the distribution of funds into different investment opportunities for the purpose of receiving the highest possible return. Individuals invest their excess money in any of the investment avenues depending on their risk-taking capacity. Thus, any individual's financial decision making purely depends on their attitude and behaviour. Also, demographic profile plays a vital role in investment decision of the individual.

The investment decision making process is very terrible and depends upon numerous factors which varies from individual to individual. People usually behave diversely while taking any sort of decisions in their life. Some people make decisions based on their own personal experience and judgment whereas others take into account different factors which inspire them to act upon such decision. In case of an individual, the investment decision varies from person to person irrespective of any category like agriculturist, housewife, businessman, etc. Investment decision signifies where the investor wants to invest whether in banks, fixed deposits, gold, property, share market, mutual funds, etc.

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Photocatalytic degradation of levofloxacin by a novel Sm_6WO_{12}/g-C_3N_4 heterojunction: Performance, mechanism and degradation pathways

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Phylogenetic analysis and protective effects of thymol and its chromatographic fractions from a novel wild mushroom in combating oxidative stress

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ABSTRACT

Mushrooms are good sources of phytochemicals that have antioxidant and anti-proliferative effects. This study identified a unique isoform of 18S rRNA gene (864 bp) from a novel wild mushroom (SMK-1) (GenBank accession number: SUB3267363). Thin layer chromatographic (TLC) profiling of the methanolic extract of the dried mushroom fruiting bodies of SMK-1 revealed the presence of phenolic and flavonoid fractions with retention factor (R_f) values of 0.955 and 0.927 respectively. The GC/MS chromatograms of the SMK-1 methanolic extract identified the main bioactive compound was phenol, 5-methyl-2-(1-methylethyl) (74.00%) (thymol). The radical scavenging activity for the flavonoid fraction was greater than the phenolic fractions (R_f–phenolics fractions > R_f–flavonoid fractions) with the antioxidant activity more than that of standard ascorbic acid. Also, the phenolic and flavonoid fractions of SMK-1 expressed cytotoxic effects in HeLa cells with IC_{50} values ranging from 5 μg/mL to 80 μg/mL in a dose-dependent manner. This present research highlights the presence of high thymol concentration in a novel wild mushroom that has antioxidant and anti-poliferative potential with therapeutic benefits. The application of thymol natural products from novel mushroom SMK-1 as nutrition supplements could inhibit oxidative stress triggered by numerous pathologies that may pave the way to develop a new therapeutic natural drug.

1. Introduction

In recent years, consumption of wild mushrooms has risen globally, increasing their earning potential and economic contribution by around two billion dollars [1]. Mushrooms are non-timber forest goods that are significant for both their pharmacological and nutritional values. They are sources of several pharmacologically active molecules that can improve to strengthen the immune function and defend against carcinogenic substances [2]. A recent study has found that mushrooms contain bioactive compounds that have innumerable therapeutic benefits such as immune-modulation, antitumor and chronic bronchitis improvement [3].

Several types of mushrooms are nutritious and edible, providing vitamins, carbohydrates, protein, amino acids, minerals and bioactive substances [4]. *Gloeophyllum sepiarium* (Rusty gilled polypore) is an inedible wood-decay fungus but possesses medicinal properties and grows on coniferous trees in small, dark brown/green brackets [5]. A study reported that largest edible basidiomycete mushroom, *Agaricus bisporus*, belonging to the genus *Agaricaceae* has a delicious taste with much more nutritional benefits and has been used in the food industry for its very strong aroma or flavoring taste [6]. A balanced

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Phytomediated synthesis and characterization of silver nanoparticles from the leaf extracts of *Clausena anisata* (Willd.) Hook. F. Ex Benth. and its antimicrobial activity

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Abstract
Development of biologically inspired phytomediated synthesis of silver nanoparticles is evolving into an important branch of nanobiotechnology. In the present investigation, we report the phytomediated synthesis of silver nanoparticles (AgNPs) employing the leaf extract of *Clausena anisata* (Willd.) Hook.f. ex Benth (Rutaceae). The synthesized Ag-NPs were characterized by UV-visible, X-ray diffraction (XRD), Fourier-transform infrared (FT-IR), Scanning electron microscopy (SEM), and Energy dispersive X-ray (EDX). Formation of silver nanoparticles was confirmed by the change of colour from pale yellow to dark brown in colour. These results authenticated that the appearance of AgNPs was analyzed by UV- visible spectrum around the peak 420 nm. XRD (X-ray diffractometer) demonstrated the formation of crystalline AgNPs with FCC structure having an average crystalline size of 20.42 nm from XRD profile. FT-IR analysis revealed the presence of different functional groups in the synthesized AgNPs. Antimicrobial activity of the synthesized silver nanoparticles was evaluated against Gram positive and Gram negative bacteria such as *Bacillus subtilis*, *Staphylococcus aureus*, *Streptococcus faecalis*, *Klebsiella pneumoniae*, *Pseudomonas aeruginosa*, *Escherichia coli* and fungus *Candida albicans*. Both the leaf extract and synthesized silver nanoparticles from the leaves of *Clausena anisata* showed moderate antimicrobial activity.

Keywords: phytomediated synthesis, characterization, *clausena anisata*, silver nanoparticles, antimicrobial activity

Introduction

Nanotechnology deals with the production and stabilization of various types of nanoparticles (Feymen, 1991) [6]. In order to obtain nanoparticles in large quantities within a short period, physical and chemical procedures are used (Bigall and Eychmuller, 2010) [5]. Biologically synthesized silver nanoparticles (Ag-NPs) have wide range of applications because of their remarkable physical and chemical properties (Balantrapu and Goia, 2009) [2]. Nowadays research mainly based on advanced nanomaterials of noble metals like silver has attracted a lot of interest among scientists during the past decades for its physiochemical properties such as size, distribution and morphology, they have been studied for catalytic activity, optical properties, electronic properties, antibacterial properties and magnetic properties (Song and Kim, 2009; Santos *et al* 2012) [15, 14] and its application in various field such as biomaterial production, biochemistry, medical and pharmaceutical products, toothpastes, optical receptors, biosensing, etc. (Banerjee *et al* 2014; Navaladian *et al.* 2007; Rajasekharreddy *et al.* 2010) [3, 12, 13].

Silver nanoparticles of range between 1 nm and 100 nm in size and have attracted intensive research interest. It is generally recognized that silver nanoparticles may attach to the cell wall, thus rupturing cell-wall permeability and cellular respiration. The nanoparticles may also penetrate inside the cell causing damage by interacting with phosphorus and sulfur containing compounds such as DNA and protein. Generally, silver does not adversely affect viable cells and does not easily provoke microbial resistance (Srividhya *et al.* 2018) [16]. Very recently plant extract of *Neolitsea sericea* (Srividhya Pattabiraman *et al.* 2018) [16], *Hugonia mystax* L (Tamilsevan *et al*. 2016) [17], *Corchorus tridens* (Karuppasamy *et al.* 2019) [10], *Abutilon indicum* (Ashokkumar *et al*. 2013) [1] reported in literature with nanoparticle size ranging from 5 to 20 nm are brimming in literature as a source for the synthesis of silver nano silverparticles as an alternative to the conventional methods. It is evident from the previous reports that no work has been carried for the synthesis, characterization and antimicrobial assay of synthesized silver nanoparticles from the aqueous leaf extracts of *Clausena anisata* (Willd.) Hook.f. ex Benth. By considering the vast potentiality of plants as sources, the present study was envisaged to apply a biological green technique for the synthesis of silver nanoparticles as an alternative to conventional methods.

Materials and Methods

Preparation of *Clausena anisata* leaves extract

The AR grade of silver nitrate was purchased from Sigma-Aldrich chemicals in India. Microbial strains were procured from Department of Biology, Gandhigram Rural Institute - Deemed University, Gandhigram. Mueller–Hinton broth and agar were purchased from Hi-Media, Mumbai, India and fresh leaves of *Clausena anisata* were collected from Pothigai hills, Tenkasi District, Tamil Nadu, India. 25g of the fresh leaf powder was mixed with 100 ml of double distilled water and transferred into the 500 ml beaker and boiled at 100°C for 40 minutes and then brought down to room temperature. Further, the extract was filtered with Whatman No.1 filter paper and stored at 4°C.

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Phytomediated Synthesis and Characterization of Silver Nanoparticles from the Leaf Extracts of Begonia Malabarica Lam and its Antimicrobial Activity

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ABSTRACT

Development of biologically inspired phytomediated synthesis of silver nanoparticles is evolving into an important branch of nanobiotechnology. In the present investigation, we report the phytomediated synthesis of silver nanoparticles (AgNPs) employing the leaf extract of *Begonia malabarica* Lam. (Begoniaceae). The synthesized Ag-NPswere characterized by UV-visible, X-ray diffraction (XRD), Fourier-transform infrared (FT-IR), Scanning electron microscopy (SEM), and Energy dispersive X-ray (EDX). Formation of silver nanoparticles was confirmed by the change of colour from pale yellow to dark brown in colour. These results authenticated that the appearance of AgNPs was analyzed by UV-visible spectrum around the peak 420 nm. XRD (X-ray diffractometer) demonstrated the formation of crystalline AgNPs with FCC structure having an average crystalline size of 24 nm from XRD profile. FT-IR analysis revealed the presence of different functional groups in the synthesized AgNPs. Antimicrobial activity of the synthesized silver nanoparticles was evaluated against Gram positive and Gram negative bacteria such as *Bacillus subtilis, Staphylococcus aureus*, *Streptococcus faecalis, Klebsiellapneumoniae*, *Pseudomonas aeruginosa*, *Escherichia coli* and fungus *Candida albicans.* Both the leaf extract of *Begonia malabarica* and synthesized silver nanoparticles from the leaves of *Begonia malabarica* showed moderate antimicrobial activity.

Keywords: Phytomediated synthesis, characterization, *Begoniamalabarica*, silver nanoparticles, Antimicrobial activity,

Introduction

The growth of nanotechnology is rapid in the areas of research and development that holds tremendous applications for the society, industry and medicine (1). Nanotechnology mainly deals with the formulation of experimental process for the synthesis of nanomaterials using different systems with their wide applications. The use of metal nanoparticles has received extensive attention in present century due to their remarkable properties and wide range of the applications (2). They can be synthesized by several physical, chemical and biological methods (4-6).Use of toxic chemical synthesis greatly limits their biomedical applications

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PROBLEMS FOR IMPLEMENTING SUSTAINABLE MANUFACTURING PRACTICES BY TEXTILE INDUSTRIES IN VIRUDHUNAGAR DISTRICT

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ABSTRACT
Nowadays, sustainable manufacturing practices had become a critical issue for the manufacturing industrial units worldwide. Sustainable practices are most important concept to survive in today's competitive business world. Today's current business environment the implementation of sustainable manufacturing practices is still relatively low in both manufacturing and service sectors. The purpose of this paper is to investigate problems for implementing sustainable manufacturing practices in textile industries.

Keywords: Problems, sustainable, manufacturing, practices.

1. INTRODUCTION
Sustainable manufacturing practices had certainly become one of the critical issues for the textile industry. The textile industry has positive contributions to the Indian economic development. The textile industry constitutes a production system that directly and indirectly relates to economic wealth creation as well as impacts on the natural and human environment along all dimensions of the product life cycle. The implementation of sustainable manufacturing practices had become a necessity for textile industry. Sustainable manufacturing is defined as the creation of manufactured products that to minimize environmental impacts, to conserve energy and resources, to reduce the waste, to conserve energy, to control emissions. This study relates to a survey in investigating the problems for implementing sustainable manufacturing practices by textile industries.

2. METHODOLOGY
The present paper is based on both the secondary and primary data collected relating to the sustainable manufacturing practices by textile industries. The secondary data provided the background and supportive information relating to this study. Primary data were also collected through a statistical survey with textile manufacturing industries in Virudhunagar district on matters relating to their profile and the sustainable manufacturing practices. A formal enquiry was made using interview schedule designed for the purpose, from 300 textile manufacturing industries selected conveniently. It was undertaken with the objective to analyze the problems for implementing sustainable manufacturing practices by textile industries in Virudhunagar district. The study is subject to the limitations that the data gathered are at descriptive level than more specific detailed analysis and the geographical area covered is limited to textile industries in Virudhunagar district only.

3. ANALYSIS AND DISCUSSION
The examination of the data collected revealed that out of the 300 samples, a majority of 157 respondents, representing 52.33%, located their industries in villages and the remaining 143 respondents (47.66%) located in municipality area. The scrutiny of data revealed that out of 300 respondents, a majority of 211 respondents, representing 70.33%, were formed as a sole proprietorship followed by 65 of the respondents (21.66%) were partnership concerns, 13 respondents (4.33%) were Co-operative Societies, 7 respondents (2.33%) were Joint Stock Companies and the remaining 4 respondents (1.33%) were Joint Hindu Family.

The analysis of data also disclosed that out of 300 respondents, notable portion of 176 respondents, representing 58.66%, were micro industries, followed by 88 respondents (29.33%) were small industries and the remaining 36 respondents (12%) were medium industries. The analysis of the data gathered showed that a majority of 187 respondents, representing 62.33 per cent, had membership with industrial association, followed by 89 respondents (29.66%) had membership with commerce association, 16 respondents (5.33%) had membership with eco-club and the remaining 8 respondents (2.66%) had membership with other local association like wild life save, consumer protection, union and so on. The following is the tabular presentation of the above findings on different profile variables.

TABLE – 1 PROFILE OF THE TEXTILE MANUFACTURING INDUSTRIES

S. No.	Profile variables	Number of respondents	Percentage to total
Location			
1	Municipality	143	47.66

R – Number Of Some Families Of Graphs

Document Type : Primary Research paper

Authors

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Abstract

Let G(V(G),E(G)) be a simple connected graph. An injective function f : V (G) → {1, 2, 3, ...} is said to be an R-labeling if it satisfies the following conditions: |f (u) − f (v)| ≥ 2, if d(u, v) = 1 ; |f (u) − f (v)| ≥ 1, if d(u, v) = 2, for any two distinct vertices u, v ∈ V (G). The span of an R−labeling, f , is the largest integer in the range of f and is denoted by fR. The R− number, R(G) or R of G is the minimum span taken over all R−labelings of G. In this paper, we determine the R – number of some families of graphs.

Keywords

R – number ; span ; λ-number

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Applied Surface Science
Volume 569, 15 December 2021, 151104

Full Length Article

Rational design of novel 3D flower-like praseodymium molybdate anchored graphitic carbon Nitride: An efficient and sustainable photocatalyst for mitigation of carcinogenic pollutants

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Issue 48, 2021

Previous Article | Next Article

From the journal:
New Journal of Chemistry

Simple fabrication and unprecedented visible light response of $NiNb_2O_6$/RGO heterojunctions for the degradation of emerging pollutants in water†

Benjamin Moses Filip Jones,[a] G. Mamba,[b] Sajid Ali Ansari,[c] D. Maruthamani,[d] V. Muthuraj[*a] and T. T. I. Nkambule[b]

Author affiliations

Abstract

Utilization of environmentally friendly and effective synthesis methods to fabricate visible light responsive photocatalysts with impressive catalytic performance is desirable in photocatalytic water treatment. Herein, we employed the powerful and environmentally benign ultrasonic synthesis to hybridize hydrothermally prepared $NiNb_2O_6$ with varying amounts of RGO (5, 10 and 15 wt%) obtained *via* a modified Hummers' method. The samples were characterized extensively using analytical techniques such as XRD, SEM-EDX, TEM, UV-Vis DRS, PL, XPS, M-S and EIS, and subsequently employed for the degradation of doxycycline (DOX) and tetracycline hydrochloride (TC) in water under visible light exposure. The binary nanocomposites displayed enhanced activity compared to $NiNb_2O_6$, with the highest activity attained over the 10 wt% RGO sample ($NiNb_2O_6$/10 wt% RGO) which achieved 89.2% and 94.1% DOX and TC removal in 80 min, respectively. This was ascribed to improved visible light response, and charge separation and transfer. Furthermore, the influence of pH, pollutant initial concentration and photocatalyst dose was investigated. The hydroxyl radicals and holes were identified as the predominant reactive species responsible for degradation of both DOX and TC. Finally, a feasible charge transfer pathway was proposed to explain the formation of the reactive species and GC-MS analysis was employed to track the degradation route of DOX. This work presents a simple and effective route for coupling RGO and $NiNb_2O_6$ nanoparticles for antibiotic pollution abatement which is currently a major environmental concern.

SOCIO PSYCHO DOMAIN CONSTRAINTS OF WOMEN ENTREPRENEURS IN MADURAI DISTRICT, TAMIL NADU, INDIA, TAMIL NADU, INDIA– A STUDY

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Abstract

Indian Women are second to none in terms of intelligence and talents. The Main Constraint in Indian woman is her inability to abandon her domestic responsibility. Even when women have skills and capacities they are not oriented and trained towards successful entrepreneurship. In many cases, importing a skill to a girl is considered to be a drain on the resources as she is unlikely to contribute to the family economy once she gets married. Problems of women entrepreneurs are both self-imposed and imposed by the environment. The attitudes and motivation underlying career aspirations, plans and decision. Making of women are the products of special norms of socialization process. A women's role refers to the way she is expected to behave in certain situations. The Married and emigrated women entrepreneurs coming from nuclear families experience greater role stress than the unmarried local women entrepreneur coming from Joint family. Based on the above background the objectives are i) to find out the socio psycho constraints of women entrepreneurs in Madurai District, Tamil Nadu, India and ii) to provide suitable suggestions to overcome this problems.

Total of 200 samples are taken for the study and it includes 100 registered and 100 unregistered units. For the selection of 100 registered women entrepreneurs, proportionate sampling technique has been used. Simultaneously, for the selection of 100 unregistered women entrepreneurs, simple random sampling technique has been used as their population is unknown and infinite. The period of the study are January 2020 to March 2020. To verify the objectives Factor analysis techniques is used.

Keywords: Women entrepreneurs, Problems of women entrepreneurs and socio psycho constraints.

Sol-Gel Synthesis of CdS/Glass & CdS/Si Thin Films for Optoelectronic Devices

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V.H.N.Senthikumara Nadar College

Research Article

Keywords: CdS/Glass & CdS/Si thin films, XRD, SEM, EDAX, PL, FTIR, Four-probe

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Sol-Gel Synthesis of CdS/Glass & CdS/Si Thin Films for Optoelectronic Devices

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Abstract

Cadmium chalcogenides have gained huge attention during the past few decades from investigators exploring various applications like optoelectronic, photovoltaic, thermoelectric devices etc. In the present work, CdS thin films had been deposited onto glass and silicon substrates using sol - gel spin coating technique. The structural, surface morphological, optical and electrical properties of the synthesized films were studied. The X-Ray diffraction analysis revealed that the prepared films have hexagonal structure with preferential orientation along (0 0 2) plane. The structural parameters such as crystallite size, strain and dislocation density of the prepared films were estimated and reported. The SEM image of the CdS thin films showed a uniform, homogeneous and granular morphology over the entire surface of the substrate. The PL spectrum showed three emission peaks; dominant peak occurs at 575 nm and the other two peaks occur at 525 nm and 480 nm. The FTIR study gave the bonding present in the CdS thin film samples. The Four-probe results showed that the electrical conductivity increases with increase in temperature. The present study suggested that CdS thin films on Si wafer could be a good promising candidate for the fabrication of optoelectronic devices.

Keywords: CdS/Glass & CdS/Si thin films, XRD, SEM, EDAX, PL, FTIR, Four-probe

1. Introduction

CdS, belonging to the II – VI group is one of the promising materials for opto electronic applications. The deposition of CdS films has become increasingly important in recent years due to the widened industrial application with a large number of uses [1 – 3]. For example the heterojunctions, based on CdS thin films are very promising structures for solar cells because of suitable band gap, optical absorption, and good stability of the used materials [4 – 6]. CdS does not play a direct role in photovoltaic conversion of solar radiation, however, it is adequate as an optical window and preferred over other materials of

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Research Article

SPI Transactional Database using secure elastic cloud access with OOB

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Abstract

Security is the major issue in cloud computing that connects electronic media of diversified location. It is accessed by the privileged and authenticated user as the recent cloud computing trends proceeds towards server access which make the security concept more vital. Another factor considered in cloud access is the cloud virtualization that entirely depends on server along with the concept of distributed computing. This work focus on cloud authentication mechanism using Out of Band (OoB) mechanism that is used in cloud SPI model. In order to make the authentication mechanism stronger the proposed method takes the challenge of handling storing authentication mechanism for SPI cloud model instead of using two phase authentication model.

Index terms: SPI model, two phase authentication, Out of Band, Privileged cloud

Introduction

The cloud model comprises of SPI model that includes Software, Platform and Infrastructure as its services. Every application used in cloud or taken from the cloud services referred as cloud application that is accessed from the cloud server. The access of application taken from the cloud server needs strong authentication mechanism [Choudhury, Amlan Jyoti, 2011]. It assists the user to gain stronger authentication access to gain momentum of the cloud access. As the cloud server may present anywhere so as the user, the authentication mechanism need to be stronger for providing access grant to the user. It also provides greater flexibility of the cloud server access to the user for all its Software, Platform, and Infrastructure.

The different categories of cloud access are its Public, Private and Hybrid cloud access. As the cloud access are updated frequently the new version has more features for sharing information, its access using the concept of virtualization, scalability, utilization of its software, platform, and infrastructure as a services, in distributed approach. While addressing the impact of security issues by the cloud performance [K.Xiong and H.Perros, 2009] that is evaluated using cloud resource utilization, and its security concern in cloud virtualization in distributed cloud approach is addressed with two phase

Statistical Optimization of Poly-β-Hydroxybutyrate Biosynthesis Using the Spent Mushroom Substrate by *Bacillus tequilensis* PSR-2

Original Paper | Published: 06 May 2020
Volume 12, pages 6709–6725, (2021) Cite this article

Waste and Biomass Valorization
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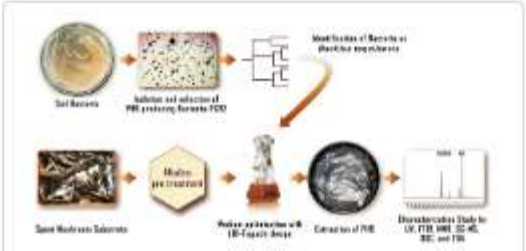
Kanagavel Sasidhra, Kannan Badri Narayanan ✉, Uthandakalaipandian Ramesh, Chelliah Edward Raja, Gandhi Premkumar ✉, Govindaraju Vaseeharaju, Arunachalam Vijayakumar, Marikani Kannan & Kaniappan Rajarathinam

Abstract

Poly-β-hydroxybutyrate (PHB) belonging to the polyhydroxyalkanoates family is a natural polyester used as a biodegradable plastic for various commercial applications. In this study, soil samples from the vegetable oil processing industry were used to screen for PHB producing bacteria using Sudan black B staining. Among the isolated bacteria, PHB positive PSR-2 isolate was chosen as a potent PHB producer. The phylogenetic tree revealed that the PSR-2 isolate has a high 16S rRNA gene sequence similarity of 99.9% with *Bacillus tequilensis*. The PHB content of 2.6 ± 0.09 g/L was produced by PSR-2 isolate in 48 h in a nutrient broth medium containing 1% glucose compared to the PHB production of 1.6 ± 0.08% by the reference strain, *Bacillus circulans*. Taguchi method was used to optimize PHB production using the alkali-pretreated spent mushroom substrate of sugarcane bagasse (SMS-SB) as an additional carbon substrate along with other energy sources. The optimized factors in the contribution of PHB production from the highest- to the lowest-ranking are as follows: alkali-pretreated SMS-SB, glucose, glycerol, peptone, ammonium chloride, and potassium dihydrogen phosphate at 30 °C, pH 7.0, which resulted in the production of 12.6 ± 0.95 g/L PHB was higher than the predicted value of 11.59 g/L. The synthesized PHB was characterized using Ultraviolet–visible spectrophotometry, Fourier transform infrared spectrometry, differential scanning calorimetry, thermogravimetric analysis, nuclear magnetic resonance spectroscopy, and gas chromatography–mass spectrometry. The results revealed the presence of hydroxyl (–OH), methyl (–CH_3), methine (=CH–), methylene (–CH_2–) and ester carbonyl (>C=O) groups, which confirmed the PHB structure. Thus, alkali-pretreated SMS-SB plays a significant role as an energy substrate for the production of PHB. This gives the knowledge to utilize cost-effective lignocellulosic agro-waste materials as a feedstock for the sustainable production of biodegradable PHB for many biomedical applications.

Graphic Abstract



Environmental Research
Volume 204, Part A, March 2022, 111915

Statistical optimization of silver nanoparticle synthesis by green tea extract and its efficacy on colorimetric detection of mercury from industrial waste water

P. Prema [a], V. Veeramanikandan [b], K. Rameshkumar [c], Mansour K. Gatasheh [d], Ashraf Atef Hatamleh [e], Ravindran Balasubramani [f], P. Balaji [g]

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Sustainable biocarbon materials derived from *Lessonia Trabeculata* macroalgae biomass residue for supercapacitor applications

Sivashunmugam Sankaranarayanan, Muruganandham Hariram, Singaravelu Vivekanandhan, Rodrigo Navia

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Abstract

Value addition of waste (or) residual biomass gain more interest because it comes under the category of "waste to wealth" and creates new pathway to biorefinery processes. Owing to high carbon contents, residual biomasses are considered as a potential raw material for the preparation of biocarbon materials which are eco-friendly and can be the alternate for traditional carbon materials. This study reports the preparation of pristine and activated biocarbon materials using *Lessonia Trabeculata* macroalgal residual biomass as carbon source by thermochemical process. The physiochemical properties of the synthesized biocarbon materials were investigated through powder X-ray diffraction, Fourier transform infrared, Raman, and X-ray photoelectron spectroscopy, scanning electron microscopy and Brunauer-Emmett-Teller surface area analyses. The activated biocarbon resulted higher specific surface area (769 m^2/g) than pristine biocarbon (60 m^2/g). Both pristine and activated biocarbon were used to fabricate electrodes for symmetric supercapacitor and the assembled capacitive cells showed the specific capacitance of 45.2 and 81.6 $F g^{-1}$, respectively, at 1 $A g^{-1}$ specific current using 1 M potassium hydroxide electrolyte. Also, the fabricated biocarbon materials showed excellent capacitance retention (96%) during 500 cycles. The results indicate that the activated carbon prepared from residual macroalgal biomass have more promising application scope in the field of supercapacitors.

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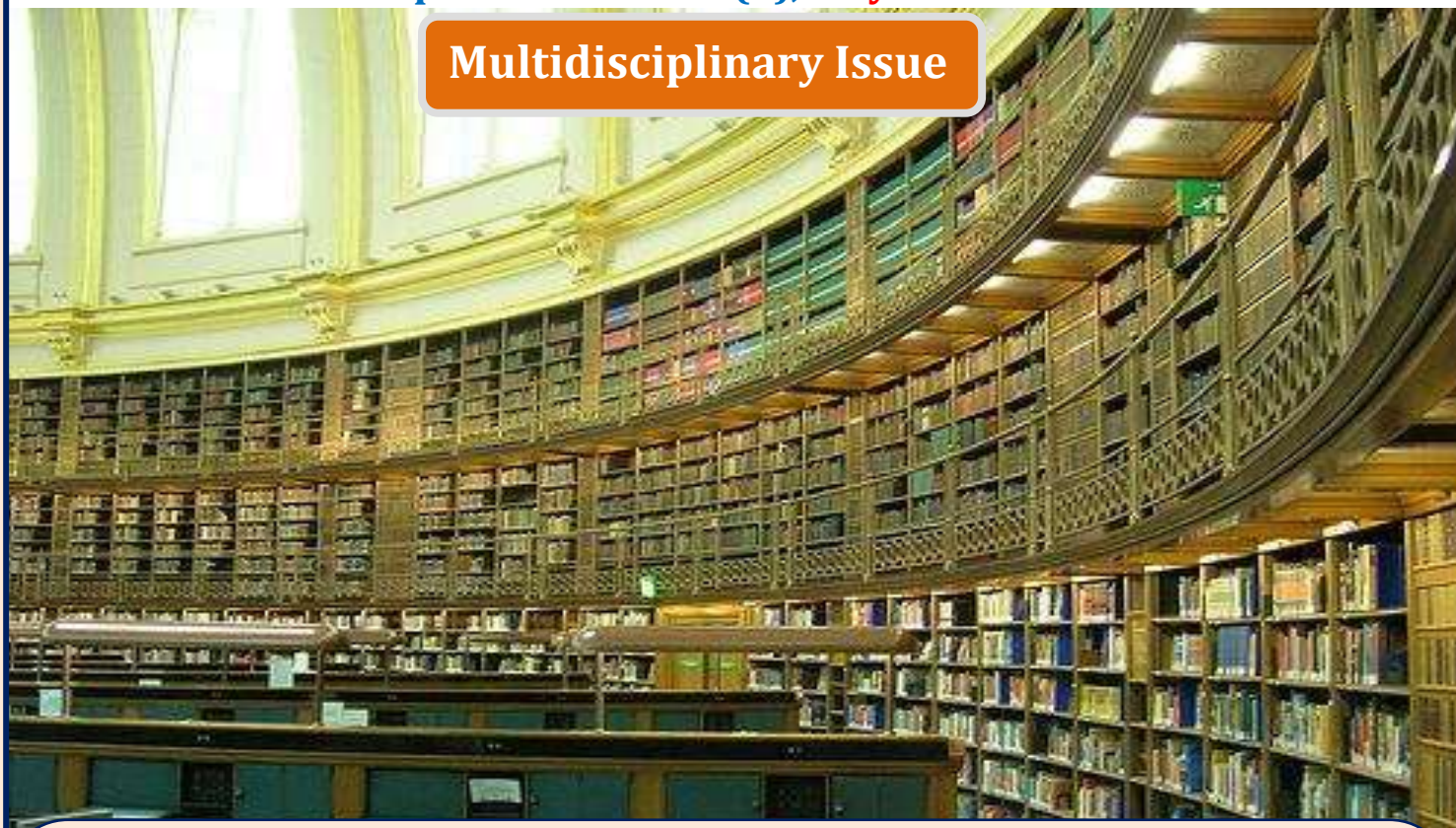

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INDEX

Journal of Molecular Structure
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Sustainable synthesis of silver nanoparticles using *Alstonia scholaris* for enhanced catalytic degradation of methylene blue

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ASIAN JOURNAL OF CHEMISTRY

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Synthesis and Characterization of Nano-TiO_2 using Aqueous Extract of *Erythrina variegata* Leaves

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In present work, the *Erythrina variegata* leaves extract acts as a reducing agent for the green synthesis of titanium dioxide (TiO_2) nanoparticles. The characterization of the extracted TiO_2 nanoparticles were confirmed by ultraviolet spectral studies (UV-Vis), Fourier transform infrared (FT-IR) spectroscopy, X-ray diffraction (XRD), energy dispersive X-ray spectroscopy (EDAX) and scanning electron microscopy (SEM). The UV-Vis absorption spectrum exhibited maximum absorbance peak at 317.6 nm, which supports the formation of TiO_2 nanoparticles. The optical band gap energy value has been determined as 2.35 eV. Further characterization by XRD supports the crystallinity and the incidence of peak at 25.28 ºC corresponds to 101 anatase form. The anatase phase TiO_2 sample having tetragonal structure with mean crystalline size was found to be 7.91 nm. Scanning electron microscope image supports the shape of the nanoparticles. These nanoparticles are having effective dye degradation ability with various time intervals. The green synthesized TiO_2 nanoparticles exhibits interesting photocatalytic efficacy on methylene blue dye under UV irradiation (using multi-lamp photo reactor) and antibacterial activity against pathogenic organisms like Streptococci, *Staphylococci*, *E. coli* and *Pseudomonas aeruginosa*.

Keywords: *Erythrina variegata*, Titanium dioxide nanoparticles, Photocatalytic efficacy, Antibacterial activity.

INTRODUCTION

The research in nanotechnology pledges quantum leaps not only in materials manufacturing and nanoelectronics but also possesses a number of application in health care, medicine, energy, biotechnology and safety. It provides a broad range of novel uses and improved technologies for numerous applications [1]. It is an emerging field of applied science focused on design, size, synthesis, characterization and application of material and device on nanoscale. Now a days nanotechnology is increasing the interest of researchers towards the synthesis of nanoparticles and its rising application towards the medicinal field [2,3]. The green synthesis is one of the bottom to top up techniques. The green mediated plant, algae, fungi and bacteria provides ecofriendly, green safe, reliable and economical route to synthesize nanoparticles [4-6].

Under green nanotechnology, sustainable and novel methodologies are developed for the fabrication of metal oxide nanoparticles. In the bottom-up approach of green nanoparticle synthesis, the main reaction is reduction/oxidation. To prepare metal oxide and metal nanoparticles, plant phytochemicals having reducing properties are used [7]. Green synthesis is considered crucial to minimize destructive effects observed in traditional nanoparticle synthesis methods commonly employed industries and laboratories. Biological components and essential phytochemicals (alkaloids, flavonoids, terpeniods, aldehydes, and amides) act as solvent systems and reducing agents. Such components can reduce metal salts into metal nanoparticles. The applications of the metal oxide nanoparticles in environmental remediation for catalytic activity, antimicrobial activity, heavy metal ion sensing and pollutant dye removal are also confirmed. Biological precursor-based green synthetic methodologies rely on different reaction parameters including solvent, temperature, pH condition and pressure [8]. It has also several advantages such as easy and simple sampling and cost effective, which facilitates the large scale synthesis of nanoparticles [9].

Green synthesis of TiO_2 nanoparticles by various plants such as *Acalypha indica*, *Citrus reticulata* peel extract, *Phyllanthus*

Articles

Synthesis, characterization, ADMET, *in vitro* and *in vivo* studies of mixed ligand metal complexes from a curcumin Schiff base and lawsone

Porkodi Jeyaraman, Michael Samuel, Antonysamy Johnson & Natarajan Raman

Pages 242-263 | Received 07 Jan 2020, Accepted 19 Dec 2020, Published online: 30 Dec 2020

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Abstract

Complexes are currently synthesized from plant origin because of their therapeutic effect against certain diseases with toxicity. Hence, in this work, four new transition metal(II) mixed ligand complexes have been synthesized using a curcumin Schiff base (primary ligand) and lawsone (as co-ligand). The geometry of these complexes was explored by elemental analyses, molar conductance, thermal analysis, magnetic moment values, IR, NMR, Mass, electronic and EPR spectral studies. Electronic absorption titrations, viscosity measurements and molecular docking studies reveal that all the metal complexes interact with the CT DNA by groove binding. Among all the complexes, the copper(II) complex (complex 1) exhibits a higher K_b value (3.5×10^{-4} M) which reveals that it has a strong binding efficiency toward the CT DNA. The complexes also possess strong DNA cleavage efficiency. Cytotoxicity investigations on *Artemia salina* show that all the complexes possess higher cytotoxic effect than the ligand. Moreover, all the metal complexes have better antimicrobial efficacy than the ligand. Swiss ADME, PASS and pkCSM online softwares are helpful to predict the pharmacokinetic and biological actions of the curcumin Schiff base. Theoretical results obtained from the *in silico* study are experimentally corroborated by *in vivo* anti-inflammatory screening study. All the above studies demonstrate that the copper complex possesses biological activity similar to that of the drug like molecules.

Research Article

Synthesis, spectral characterization, DNA-binding and antimicrobial profile of biological active mixed ligand Schiff base metal(II) complexes incorporating 1,8-diaminonaphthalene

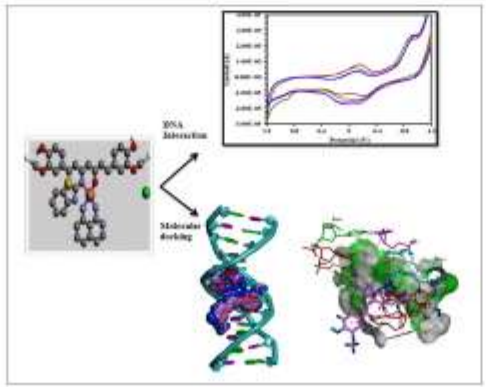
Thiravidamani Chandrasekar, Alagarraj Arunadevi & Natarajan Raman

Pages 804-822 | Received 30 Jul 2020, Accepted 11 Dec 2020, Published online: 11 Jan 2021

Cite this article https://doi.org/10.1080/00958972.2020.1870967

Abstract

Mixed-ligand complexes of bivalent metal ions, *viz*. Co(II), Ni(II), Cu(II), and Zn(II) of the composition [ML(dan)]Cl (where L = Schiff base ligand, dan = 1,8-diaminonaphthalene and M = Co(II), Ni(II), Cu(II), Zn(II)) have been synthesized and characterized. The stoichiometric ratio of the prepared complexes has been estimated using complementary techniques such as elemental analyses, FT-IR, UV-vis and EPR spectra, magnetic and molar conductivity measurements. The study shows that all the complexes have square planar geometry. The synthesized compounds have been tested *in vitro* against various types of pathogenic bacteria to weigh up their antimicrobial properties. They have lofty activity against the tested bacteria. The complexes have higher activity than the free ligands. The interaction of synthesized complexes with calf thymus DNA (CT-DNA) has been studied by absorption spectroscopic technique and viscosity measurements. The complexes show a successful interaction with CT-DNA *via* intercalation mode. In addition, molecular docking approach has been performed for predicting the binding free energy of the synthesized compounds with 1BNA receptor.



Inorganic Chemistry Communications
Volume 134, December 2021, 108989

Tetraaza macrocyclic Schiff base metal complexes bearing pendant groups: Synthesis, characterization and bioactivity studies

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The Historical Analysis of the First Arrival of De La Salle Brothers and their Educational Impact in India.

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Dr.A. Baskaran
Assistant Professor in History,
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Abstract

Lasallian teaching and education is a gift, a passion, a mission, a calling, a vocation. This paper contends that a Lasallian Educational pedagogy and the Lasallian Brothers were in greater demand to bring serious concerns of uplifting the poor and marginalized in few States in India through its enthralled Pedagogy. It explores how Lasallian Brothers have buried themselves completely to establish Lasallian centres in few parts of India and what caused them to quit and brought them back to the Indian soil with a great vigor, that became the torch bearers to dispel the darkness of Ignorance and illiteracy. This paper was made after the careful analytical reading and research of the letters, circulars, inscriptions, souvenirs, Reports of the Major superiors of the Brothers of the Christian school and Church Authorities during both arrivals of the Brothers in India. This brings enormous details for the cause of strengthening the implementation of Lasallian pedagogy in Lasallian mission centres.

Key Words : Lasallian Pedagogy, Brothers, Mission, Children

INTRODUCTION

Lasallian pedagogy was unique in the particular combination of teaching strategies. Lasallian pedagogy is practical, meets students where they are, sets the academic bar high, provides scaffolding to help students rise to the level of excellence, incorporates zeal, and it teaches minds, touches hearts and transforms the lives of the children[1]. Started by John Baptist De La Salle in Rheims, France in 1679, the educational system fostered by the Brothers of the Christian Schools. The Congregation of the Brothers of the Christian schools, founded by St. John Baptist De La Salle in 1680, flourished in France and Europe for over a century. The French Revolution in 1789, took its toll on this congregation of religious Brothers to propagate the Lasallian pedagogy to the other parts of the world. In 1859, the request of Pope Gregory XVI as well as the Grant-in-Aid policy of the British Government, prompted the Brothers from Malaysia to open schools in India and Burma. Br. Liefroy as well as many other pioneers of Malaysia moved over to India to open schools. Due to many reasons

Environmental Research
Volume 204, Part A, March 2022, 112030

Toxicity evaluation and oxidative stress response of fumaronitrile, a persistent organic pollutant (POP) of industrial waste water on tilapia fish (*Oreochromis mossambicus*)

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TRIPLE CONNECTED ETERNAL DOMINATION IN GRAPHS

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Abstract. The concept of Triple connected domination number was introduced by G. Mahadevan et. al., in [10]. The concept of eternal domination in graphs was introduced by W. Goddard., et. al., in [3]. The dominating set $S_0(\subseteq V(G))$ of the graph G is said to be an eternal dominating set, if for any sequence $v_1, v_2, v_3, \ldots v_k$ of vertices, there exists a sequence of vertices $u_1, u_2, u_3, \ldots u_k$ with $u_i \in S_{i-1}$ and u_i equal to or adjacent to v_i, such that each set $S_i = S_{i-1} - \{u_i\} \cup \{v_i\}$ is dominating set in G. The minimum cardinality taken over the eternal dominating sets in G is called the eternal domination number of G and it is denoted by $\gamma_\infty(G)$. In this paper we introduce another new concept Triple connected eternal domination in graph. The eternal dominating set $S_0(\subseteq V(G))$ of the graph G is said to be a triple connected eternal dominating set, if each dominating set S_i is triple connected. The minimum cardinality taken over the triple connected eternal dominating sets in G is called the triple connected eternal domination number of G and it is denoted by $\gamma_{tc,\infty}(G)$. We investigate this number for some standard graphs and obtain many results with other graph theoretical parameters.

Keywords: Triple connected domination number, Eternal domination in graphs, Triple connected eternal domination number of graphs.

AMS Subject Classification: 05C69

1. Introduction

By a graph we mean a finite, simple, connected and undirected graph $G(V, E)$, where V denotes its vertex set and E its edge set. Unless otherwise stated, the graph G has p vertices and q edges. We denote a cycle on m vertices by C_m, a path on m vertices by P_m, a complete graph on m vertices by K_m and a complete bipartite graph on m, n vertices by $K_{m,n}$. We denote a prism graph on n vertices by Y_n, $n \geq 3$ is defined by Cartesian product of a cycle with a single edge. The ladder graph can be obtained as the Cartesian Product of two paths, one of which has only one edge, denoted by L_n, $n \geq 1$. In [9], J. Paulraj

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Volume 134, October 2021, 114865

Ultrasound assisted synthesis of silver titanate for the differential pulse voltammetric determination of antibiotic drug metronidazole

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Unravelling the visible light-assisted catalytic prowess of an n–n type In_2S_3/CeO_2 Z-scheme heterojunction towards organic and inorganic water pollution mitigation†

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Abstract

The exploitation of visible light active photocatalysts for the removal of various pollutants has been given tremendous consideration in water and wastewater treatment. Herein, a novel In_2S_3/CeO_2 n–n type heterojunction photocatalyst was successfully synthesized by a two step method involving hydrothermal synthesis and subsequent ultrasonic treatment to couple In_2S_3 with CeO_2 (5, 10 and 15 wt%). The as synthesized samples were characterized extensively using analytical techniques such as XRD, UV-vis DRS, SEM-EDX, TEM, BET, PL, EIS and XPS to examine the chemical composition, phase structure, morphology and photo chemical characteristics of the materials. Subsequently, the In_2S_3/CeO_2 nanostructures were employed in the degradation of oxytetracycline (OTC) (10 mg L^{-1}) and reduction of Cr(VI) (50 mg L^{-1}) in aqueous solutions, upon exposure to visible light. Under optimized experimental conditions, the nanocomposite constituting 10 wt% CeO_2 (In_2S_3/10 wt% CeO_2) showed the highest activity, reaching 87.3% OTC degradation and 97.3% Cr(VI) reduction after 60 min and 40 min of visible light irradiation, respectively. The nature and contribution of active species in the photocatalytic process were revealed through radical scavenging studies. Finally, a plausible band structure, charge separation and transfer mechanism were crafted to illustrate the synergy between In_2S_3 and CeO_2 which led to improved degradation kinetics. This work demonstrated a simple route for improving the visible light mediated activity of In_2S_3 by coupling with CeO_2 and the potential versatility of the composite material for the removal of both organic and inorganic pollutants from water.

Visible-light-driven Pd doped β-Bi_2O_3 nanocomposite: an affordable and an efficient catalyst for mitigation of noxious pollutant

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L. T. Parvathi, M. Arunpandian, S. Arunachalam & S. Karuthapandian

Abstract

A series of surface plasmonic effect induced by Pd anchored β-Bi_2O_3 flower-shaped nanocomposite photocatalysts were prepared by the facile hydrothermal method. The crystallinity of the synthesized Pd loaded β-Bi_2O_3 nanocomposites is analyzed by powder X-ray diffraction analysis and the morphology and element presence of the synthesized Pd loaded β-Bi_2O_3 nanocomposites were characterized by field-emission scanning electron microscopy, transition electron microscopy and energy dispersive X-ray analysis. The optical properties of the synthesized Pd loaded β-Bi_2O_3 nanocomposites are analyzed by ultraviolet-visible diffuse reflection spectroscopy. The 2% Pd loaded β-Bi_2O_3 composite has higher photocatalytic activity in methylene blue degradation in visible irradiation than immaculate β-Bi_2O_3 and other Pd loaded β-Bi_2O_3 nanocomposites. The effect behind the improvement of photocatalytic activity of the 2% Pd loaded β-Bi_2O_3 composite is the surface plasmon resonance effect of Pd NPs and also interdependent bonding interaction between Pd and β-Bi_2O_3. Moreover, the radical trapping experiment substantiates that $^{\cdot}OH$ and $O_2^{\cdot-}$ play a vital role in MB abatements. The present work provides new deep insights into the intriguing other plasmonic photocatalytic materials with potential applications in the area of environmental indemnification.

Voice from the 'Other': A Feminist Reading of Doris Lessing's *The Summer Before the Dark*

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> Thus humanity is male and man defines woman not in herself but as relative to him, she is not regarded as an autonomous being … She is defined and differentiated with reference to man and not he with reference to her, she is the incidental, the inessential as opposed to the essential. He is the Subject, he is the Absolute –She is the other (Beauvoir346)

Abstract:

The concept 'the Other'is a literary theory, which defines one's identity among others. It explains the state of a person who is neglected or subordinated and displays how one feels as an alien by gender, caste, religion, culture, appearance, geography, ideology and so on. Doris

WOMEN EMPOWERMENT THROUGH SELF HELP GROUP

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ABSTRACT

As of late, issues of women are strengthening and support in self-improvement gatherings have acquired grounds and are at the middle stage in worldwide advancement talk. Despite the proof of women's achievements in a given domain of public and neighborhood-level turn of events, women's strengthening today passes on particularly to be wanted. In endeavors to improve and upgrade the support and strengthening of ladies, the third Millennium Development Goal (advancing sexual orientation correspondence and ladies strengthening) is centered on women's upliftment in the financial advancement of Madurai. This examination is expected to accomplish various goals. Among these are: to analyze the idea of Self-assistance gatherings (SHGs) in the Madurai; to evaluate techniques of engaging ladies through SHGs; to inspect the degree to which ladies are enabled by partaking in SHGs; to look at the difficulties blocking the gatherings in engaging ladies. The investigation took on the contextual analysis approach which permits factual derivations to be made to a more extensive populace so that outcomes can be extrapolated. Multistage examining procedure and the subjective and quantitative investigation were utilized to come out with the experimental discoveries. The investigation uncovered various fascinating discoveries which include: different nature of SHGs with around 67% being shaped along strict and financial lines; ability preparing, grown-up instruction, and endeavor improvement as the procedures of enabling ladies through SHGs. The degree of women's strengthening through taking part in bunches areas expanded self emphatics and certainty and protection from negative social practices; and difficulties, similar to helpless participation of individuals, hindering the activities of the gatherings in engaging ladies. Because of the discoveries uncovered, various recommendations were made to upgrade the strengthening of ladies. These incorporate the accompanying: working on the idea of SHGs; upgrading methodologies of engaging ladies through the gatherings; working on the inclusion of SHGs in women's strengthening and defeating the difficulties of SHGs.

Keywords: *Empowerment, self-improvement, Self Help Group (SHG)*

Introduction

The previous thirty years have seen a consistent expansion in the consciousness of the need to enable ladies through measures to build social, monetary, and political value, and more extensive admittance to crucial common liberties, enhancements in sustenance, fundamental wellbeing, instruction, and self-improvement gatherings (SHGs). Indeed, even in the light of uplifted global mindfulness on sex issues, it is an upsetting reality that no nation has yet figured out how to kill the expanding sexual orientation hole. A few nations that don't benefit from the maximum capacity of one portion of their social orders are misallocating their HR and sabotaging their serious potential in their formative journey (Zahidi, 2005). Ladies are considered as an amazingly significant point during the time spent change in the country regions. Women's support in self-improvement gatherings gives them the chance to be effectively engaged with the dynamic cycle. Women's interest through women's bunches has demonstrated to be a powerful way to achieve an adjustment of their lifestyle as far as financial prosperity and reception of innovation (Singh, 2009). Ladies in Madurai contribute massively to public turn of events and there is in this manner the need to urge and support ladies to effectively include themselves in open life and administration

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ORKERS CONFIDENCE AT THE WORK PLACE WITH THE USE OF HAND SANITIZE – A STUDY WITH REFERENCE TO VIRUDHUNAGAR

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STRACT

The use of hand sanitizers has risen as a result of the pandemic.Hand hygiene is one of the most important sures to prevent the spread of infectious diseases. Although the usefulness of hand sanitizer is variable, it nployed as a simple means of infection regulator in a broader areas such as daycare centers, universities, itals, health care clinics and super markets. As a result of growing alertness about hand hygiene and its fits, there has been a continuous growth in claim of hand sanitizers. Hand sanitizers are especially l in offices and work environments because they can prevent the spread of infection and diseases, which ltimately lower the levels of absenteeism and presenteeism. Illnesses increase the number of sick leaves by workers. By helping in maintaining the health of workers, employers will not only provide a safer and ier work environment but will also boost workers morale and motivate them to work harder. If a workers peace of mind that they will safe from viruses and bacteria while at work, they will be able to focus on properly. This will significantly improve their productivity, which is always a good thing. And a healthy and body mean happy working time always. This report highlights the confidence of workers at work with the use of hand Sanitizers in this present pandemic situation with reference to Virudhunagar. For udy, the population in Virudhunagarwas taken and data was collected using unstructured questionnaire he 100 sample respondents.Hand sanitizer's help in reducing the effect of corona virus and kills it. India ling with a major outbreak of coronavirus, and the situation is deteriorating due to the second version of 19.

ords: **Hand hygiene, Hand sanitizers, safety, work place. Pandemic, workers, Covid 19.**

DUCTION

nd sanitizer, also called hand antibacterial or hand clean, negotiator applied to the hands for the persistence oving disease-causing creatures. Hand hygiene is one of the most important measures to prevent the t of infectious viruses. Hand sanitizer use is suggested when soap and water are not accessible for hand g or when repeated hand washing negotiations the normal skin barrier. Although the usefulness of hand r is variable, it is employed as a simple means of infection regulator in a broader areas such as daycare universities, hospitals, health care clinics and super markets. As a result of growingalertness about giene and its benefits, there has been a continuousgrowth in claim of hand sanitizers. Hand sanitizers y come in spray, lotion or fluid form. In most settings, hand washing with cleanser and water is y preferred. Hand sanitizer is less active at carnage certain types of microorganisms, such as norovirus stridia difficile, and dissimilar hand washing, it cannot substantiallyeradicateinjurioussubstances. lent may incorrectly rub off hand sanitizer before it has dehydrated, and some are less active because uorabsorptions are too low.

ENT OF THE PROBLEM

ver-increasing number of labors might needgood sanitation is a minister to health, comfort, and public ns. Current humanity is well aware of hygiene. Washing hands is one of the simplest, most effective becomefree of microorganisms and evade infection. Transient viruses can be of any type, from any ay affect the body. As hands carry out the majority of roles of the human's body and are visible to a substances, hands hygiene plays a chief conscientiousness. Herbal plants are the exclusive resources

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of every country with powerful medicinal properties cover ways towards sustainable
samples were subjected to bacterial

Document details - Partially purified lead molecules from Dodonaea viscosa and their antimicrobial efficacy against infectious human pathogens

Journal of Infection and Public Health

Volume 14, Issue 12, December 2021, Pages 1822-1830

Partially purified lead molecules from Dodonaea viscosa and their antimicrobial efficacy against infectious human pathogens(Article)(Open Access)

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Abstract

Background: The utilization of medicinal plants and their drugs have the advantage of reducing side effects compared with manufactured antimicrobials. Artificial drugs have unpleasant side effects, further, the number of drug resistant pathogens is increasing, thus huge challenge for control of resistant pathogens. Therefore, the current research explores the potential of partially purified bioactive compounds from Dodonaea viscosa against certain human pathogens. Methods: Healthy leaves of D. viscosa (L.) were collected, extracted and optimized with different solvents. Preliminary phytochemical screening of the extracts was done and antibacterial activities were tested against human pathogens. The active crude extract was further purified by column chromatography and the homogeneity was confirmed by thin layer chromatography (TLC). The partially purified compounds were screened further for antibacterial, antibiofilm and anticancer activities. Results: The crude ethanol extract of D. viscosa leaves showed the presence of phytochemical like tannins, alkaloids, flavanoids, terpenoids, glycosides, steroids and phenols. Ethanol extract exhibited the maximum zone of inhibition (11 mm) against S. agalactiae, B. cereus, S. typhi and E. coli at 15 mg when compared with other bacteria. Column chromatography fractions Dv12 and Dv20 exhibited the maximum zone of inhibition against B. cereus. 1000 μg of Dv12 partially purified compound against streptococcus isolates in glass test tube showed biofilm inhibition range of 34.4%–63.1%. Whereas B. cereus, S. aureus, S. typhi, and K. pneumoniae showed 31.1%–53.6% biofilm inhibition compared to curcumin control. Active fractions of Dv12 and Dv20 increased concentration confirmed that the gradual decrease in cell density and possesses growth inhibition towards A 549 human lung adenocarcinoma cells. Conclusion: We have extracted the bioactive compounds from D. viscosa (L.) leaves and tested the activity of a partially purified compound against human pathogenic bacteria, biofilm formation and cytotoxicity against A 549 human lung adenocarcinoma cells. The purified bioactive compounds might be used as therapeutic agents against different microbial infections such as skin infection, throat infection and other infectious diseases. © 2021

Author keywords

Anti-bacterial | Anti-biofilm | Anti-cancer | Bioactive compounds | Dodonaea viscosa | Partially purified

Indexed keywords

EMTREE drug terms: alcohol | alkaloid | curcumin | glycoside | phytochemical | polypeptide antibiotic agent | steroid | tannin derivative | terpenoid | antiinfective agent | plant extract

EMTREE medical terms: antibacterial activity, antibiofilm activity, antineoplastic activity, Article, bacterial growth, biofilm, cell density, column chromatography, communicable disease, controlled study, cytotoxicity, data analysis software, Dodonaea viscosa, Escherichia coli, growth inhibition, high content screening, human, human cell, Klebsiella pneumoniae, pathogenesis, pharyngitis, plant leaf, screening, skin infection, Staphylococcus aureus, Streptococcus, thin layer chromatography, zone of inhibition, communicable disease, microbial sensitivity test

MeSH: Anti-Bacterial Agents, Anti-Infective Agents, Communicable Diseases, Escherichia coli, Humans, Microbial Sensitivity Tests, Plant Extracts, Staphylococcus aureus

Chemicals and CAS Registry Numbers:

alcohol, 64-17-5; curcumin, 458-37-7;

Anti-Bacterial Agents; Anti-Infective Agents; Plant Extracts

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Shanmugaiah, V.; Department of Microbial Technology, School of Biological Sciences, Madurai Kamaraj University, Madurai, Tamil Nadu, India;

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Applied Physics A: Materials Science and Processing

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Visible-light-driven Pd doped β-Bi_2O_3 nanocomposite: an affordable and an efficient catalyst for mitigation of noxious pollutant(Article)

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Abstract

A series of surface plasmonic effect induced by Pd anchored β-Bi_2O_3 flower-shaped nanocomposite photocatalysts were prepared by the facile hydrothermal method. The crystallinity of the synthesized Pd loaded β-Bi_2O_3 nanocomposites is analyzed by powder X-ray diffraction analysis and the morphology and element presence of the synthesized Pd loaded β-Bi_2O_3 nanocomposites were characterized by field-emission scanning electron microscopy, transition electron microscopy and energy dispersive X-ray analysis. The optical properties of the synthesized Pd loaded β-Bi_2O_3 nanocomposites are analyzed by ultraviolet–visible diffuse reflection spectroscopy. The 2% Pd loaded β-Bi_2O_3 composite has higher photocatalytic activity in methylene blue degradation in visible irradiation than immaculate β-Bi_2O_3 and other Pd loaded β-Bi_2O_3 nanocomposites. The effect behind the improvement of photocatalytic activity of the 2% Pd loaded β-Bi_2O_3 composite is the surface plasmon resonance effect of Pd NPs and also interdependent bonding interaction between Pd and β-Bi_2O_3. Moreover, the radical trapping experiment substantiates that $^{\bullet}OH$ and $O_2^{\bullet-}$ play a vital role in MB abatements. The present work provides new deep insights into the intriguing other plasmonic photocatalytic materials with potential applications in the area of environmental indemnification.

Author keywords

Pd@Bi_2O_3 | Photocatalyst | Photodegradation | Surface plasmon | Visible light

Indexed keywords

Engineering controlled terms: Complexation | Crystallinity | Energy dispersive X ray analysis | Field emission microscopes | Morphology | Nanocomposites | Optical properties | Photocatalytic activity | Plasmons | Scanning electron microscopy | Surface plasmon resonance | X ray powder diffraction

Engineering uncontrolled terms: Bonding interactions | Diffuse reflection spectroscopy | Field emission scanning electron microscopy | Methylene blue degradations | Photocatalytic materials | Powder X ray diffraction | Surface plasmon resonance effects | Visible-light-driven

Engineering main heading: Bismuth compounds

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Karuthapandian, S.; Department of Chemistry, V. H. N. Senthikumara Nadar College (Autonomous), Virudhunagar, India;

Document details - Biocarbons as emerging and sustainable hydrophobic/oleophilic sorbent materials for oil/water separation

Sustainable Materials and Technologies

Volume 28, July 2021, Article number e00268

Biocarbons as emerging and sustainable hydrophobic/oleophilic sorbent materials for oil/water separation(Review)

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Abstract

Oil/water separation receives increasing interest as the oil contaminants level has been continuously increasing in the water resources in most of parts of the world and is being considered as a severe environmental threat to the society. As the result, a wide range of methods have been investigated in order to minimize the oil-based contaminants (including non-polar organic solvents which are immiscible in water) in water resources, where sorption process has been widely accepted owing to their easy handling, rapid, low-cost, harmless and efficient large-scale approach. Out of the sorbents explored, carbon-based materials gained more interest in oil/water separation because of their superior physicochemical properties as well as structural advantages. The recent advancement in the carbon-based oil/water separation technology is the exploration of various renewable resource-based biocarbon materials as green and sustainable approach and their modifications to enhance the sorption properties. The advantages of renewable- biocarbon materials are, vast availability and diversity of resources with wide-range of chemical compositions, tuning/predicting the structures by choosing specific precursors and flexible structural/chemical modifications to improve the properties. Thus, the present review deals with reported biocarbon-based hydrophobic/oleophilic materials such as biochar, activated biocarbon, biocarbon fibers, biocarbon aerogels and biocarbon-based composite materials as sorbents for oil/water separation, as well as oil spill cleanup from water resources. In detail, various synthetic procedures of biocarbon materials and their physicochemical characteristics (hydrophobicity/oleophilicity, wettability, water/oil contact angle, etc.) are discussed in this review.

Author keywords

Biocarbon | Hydrophobic | Oil/water separation | Oleophilic | Sorption | Water pollution

Indexed keywords

Engineering controlled terms: Aerogels | Carbon | Chemical modification | Contact angle | Hydrophobicity | Oil spills | Petroleum prospecting | Physicochemical properties | Separation | Sorption | Water resources

Engineering uncontrolled terms: Carbon based materials | Chemical compositions | Environmental threats | Oil/water separation | Physicochemical characteristics | Sorption properties | Structural advantage | Synthetic procedures

Engineering main heading: Oil field equipment

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Document details - Structural, Vibrational, Optical and Improved Photoluminescence Properties of Dy³⁺ Doped Ca₂KZn₂V₃O₁₂ Phosphors

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Structural, Vibrational, Optical and Improved Photoluminescence Properties of Dy^{3+} Doped $Ca_2KZn_2V_3O_{12}$ Phosphors(Article)

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

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Abstract

A series of dysprosium (Dy^{3+}) ion doped $Ca_2KZn_2V_3O_{12}$ phosphors were explored which exhibits a broad band and sharp peaks in the visible region under the ultraviolet light excitation. Fourier transform infrared (FTIR) spectra and the optical diffuse reflectance spectra were ascribing the formation of the distorted VO_4 tetrahedral group due to the influence of Dy^{3+} ions. Moreover, a tunable luminescence color was achieved by doping of Dy^{3+} ion in the $Ca_2KZn_2V_3O_{12}$ phosphor. Through doping concentration optimization, the $Ca_2KZn_{1.9}Dy_{0.1}V_3O_{12}$ phosphor was observed for high color rendering index (CRI) and excellent correlated color temperature (CCT) with cool white emission. Hence, in the designing of the $VO_4 \rightarrow Dy^{3+}$ energy transfer that is capable of converting ultraviolet light into efficient white light, this phosphor is suitable for solid-state lighting applications. © 2020, Springer Science+Business Media, LLC, part of Springer Nature.

Author keywords

f–f transition | Luminescence | Solid state reaction | Vanadate garnet | W-LEDs

Indexed keywords

Engineering controlled terms: Calcium compounds | Color | Energy transfer | Fourier transform infrared spectroscopy | Ions | Light emission | Lighting | Phosphors | Ultraviolet radiation | Zinc compounds

Engineering uncontrolled terms: Correlated color temperature | Diffuse reflectance spectrum | Fourier transform infrared | High color rendering index | Photoluminescence properties | Solid-state lighting application | Tunable luminescences | Ultraviolet light excitation

Engineering main heading: Dysprosium compounds

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Synthesis and Luminescence Investigation of Eu^{3+} Doped $Ca_2KZn_2V_3O_{12}$ Phosphors: A Potential Material for WLEDs Applications(Article)

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

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Abstract

A series of white light emitting $Ca_2KZn_{2-x}V_3O_{12}:xEu^{3+}$ (x = 0.1, 0.2, 0.3, 0.4 and 0.5) phosphor samples were successfully synthesized by the traditional solid-state reaction method. The powder X-ray diffraction (XRD) patterns of the as-prepared sample reveal the high degree of crystallinity of the cubical structure with Ia3 ¯ d space group and without any other phase formation. Fourier transform infrared (FTIR) spectra confirmed the occurrence of characteristic vibrational bands of garnet vanadate. The optical diffuse reflectance spectra consisting of broad band absorption in the ultraviolet (UV) region and the sharp absorption in the visible region were ascribing to the charge transfer between ligand–metal in the VO_4 tetrahedral group and Eu^{3+} ions. Under the UV and near-UV excitation wavelengths, the broad band emission and the sharp emission were ascribing to the host material charge transfer of the VO_4 tetrahedral group and f-f transitions of the rare-earth Eu^{3+} ions respectively. Ultimately, through the doping concentration optimization, a high Color Rendering Index (CRI) and excellent Correlated Color Temperature (CCT) were achieved with cool white emission. Therefore, the contribution of $Ca_2KZn_{1.8}Eu_{0.2}V_3O_{12}$ phosphor was significant to phosphor-converted white light emitting device (WLEDs) excited with near ultraviolet.

Author keywords

f-f transition | Phosphor | Photoluminescence | Solid state reaction | WLEDs

Indexed keywords

Engineering controlled terms: Calcium compounds | Charge transfer | Crystallinity | Fourier transform infrared spectroscopy | Light | Light emission | Phosphors | Rare earths | Solid state reactions | Uranium metallography

Engineering uncontrolled terms: Correlated color temperature | Degree of crystallinity | Diffuse reflectance spectrum | Fourier transform infrared | High color rendering index | Powder X ray diffraction | Solid state reaction method | White light emitting device

Engineering main heading: Zinc compounds

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Document details - Biosynthesized transition metal oxide nanostructures for photocatalytic degradation of organic dyes

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Biosynthesized transition metal oxide nanostructures for photocatalytic degradation of organic dyes
(Book Chapter)

Sankaranarayanan, S., Hariram, M., Vivekanandhan, S., Ngamcharussrivichai, C.

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Abstract

Transition metal oxide nanoparticles have received a growing attention in the field of materials science because of their size- and shape-dependent physicochemical and functional properties. One of the promising applications of transition metal oxides is their ability to degrade wide varieties of organic dyes in the presence of sunlight or UV light irradiation. As the worldwide demand for sustainable and green processes for the synthesis of various materials increases, great attention has been paid to the synthesis of transition metal oxide nanoparticles using biogenic processes. Such green processes explore the various renewable, vast available, green, and low-cost bio-constituents derived from various bio-derived sources as sustainable, environmentally friendly and easy scalable approaches to synthesize transition metal oxide nanostructures. Thus, this chapter summarizes the research accomplishments on the biosynthesized transition metal oxide nanostructures as photocatalysts for the degradation of organic dyes. © 2022 Elsevier Inc.

Author keywords

Biosynthesis | Nanostructures | Organic dyes | Photocatalysis | Transition metal oxides

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Yadav, S. , Singh, A. , Choubey, A.K.

Composition dependent variation in structural, morphological, optical and magnetic properties of biogenic CuO/NiO mixed oxides nanoparticles

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Hazrati Saadabadi, R. , Shariatmadar Tehrani, F. , Darroudi, M.

Plant-based synthesis of ZnO–CeO2–MgO nanocomposite using Ocimum Basilicum L seed extract: Biological effects and photocatalytic activity

(2024) Materials Chemistry and Physics

Eddy, N.O. , Jibrin, J.I. , Ukpe, R.A.

Experimental and theoretical investigations of photolytic and photocatalysed degradations of crystal violet dye (CVD) in water by oyster shells derived CaO nanoparticles (CaO[sbnd]NP)

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Metallonucleases encompassing curcumin, 2-aminobenzothiazole and o-phenylenediamine: a search for new metallonucleases

(Article in press)

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Abstract

A few novelmetallonucleases were synthesized from curcumin derived Schiff base incorporating 2-aminobenzothiazoleand o-phenylenediamine. By characterization, these complexes were found to have 1:1:1 stoichiometry [M:L:o-Ph]. They were inferred to be electrolytic in nature in accordance to the values of molar conductance. From the spectral data the proposed geometry of all the complexes was deduced to be square planar. The complexes were screened against a few pathogens for their antimicrobial activities which reveal that they are efficient antimicrobial activity than the free ligands. The interactions of CT-DNA were studied by UV spectrophotometric, viscosity and cyclic voltammetric techniques. The complexes with higher values of K_b are optional to have greater DNA binding propensity. They have potent interaction with the CT-DNA and hence they are proficient DNA cleavable linkers due to their importance in biotechnology and drug design. Furthermore, the copper(II) complex exhibits efficient DNA cleavage with supercoiled pBR322 involving hydrolytic cleavage pathway. © 2021 Taylor & Francis Group, LLC.

Author keywords

antimicrobial activity | Curcumin | DNA binding | intercalation | metallonucleases

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Influence of Substrate Temperature on Physical Properties of Nebulized Spray Deposited SnSe Thin Films(Article)

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Abstract

Tin-based binary chalcogenide semiconductors SnSe and SnS have created increased interest in the production of earth-abundant and eco-friendly thin film solar cells. Thin films of SnSe were prepared on glass substrates at different temperatures via a nebulized spray pyrolysis technique using Stannous chlroride dihydrate and Se powder. Deposited films were characterized by structural, morphological, compositional, optical, and electrical properties. X-ray diffraction studies confirm the films are of polycrystalline orthorhombic crystal structure irrespective of substrate temperature. Scanning electron microscopy studies revealed uniform deposition with nanometer range grain size. Stoichiometric films of SnSe were observed from energy dispersive analysis by X-ray studies. UV-vis spectroscopy confirmed the formation of good adherence thin films with an average transmittance of ~70% in the visible region. Optical band gap was in the range of 1.14-1.24. The lower absorption and high transmittance in the visible region observed at lower substrate temperature represented the good optical quality of the crystals with low absorption or scattering losses. The lower electrical resistivity value of 4.84 Ωcm showed that the films are semiconducting. The structural, optical, morphological, and electrical conductivity studies of tin selenide thin films confirmed that the optimum substrate temperatures for depositing SnSe thin films by this NSP technique is 300°.

Indexed keywords

Engineering controlled terms: Crystal structure, Deposition, Electric conductivity, Energy gap, Entertainment industry, IV-VI semiconductors, Layered semiconductors, Scanning electron microscopy, Selenium compounds, Semiconducting selenium compounds, Semiconducting tin compounds, Spray pyrolysis, Substrates, Thin film solar cells, Tin compounds, Ultraviolet visible spectroscopy

Engineering uncontrolled terms: Chalcogenide semiconductors, Electrical conductivity, Energy dispersive analysis, Good optical quality, Nebulized spray pyrolysis, Orthorhombic crystal structures, Substrate temperature, X-ray diffraction studies

Engineering main heading: Thin films

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Document details - Synthesis and properties of p-si/n-cd_{1–x}ag_xo heterostructure for transparent photodiode devices

Coatings

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Synthesis and properties of p-si/n-$cd_{1-x}ag_x$o heterostructure for transparent photodiode devices(Article)(Open Access)

Anitha, M., Arun Kumar, K.D., Mele, P., Anitha, N., Saravanakumar, K., Sayed, M.A., Ali, A.M., Almalraj, L.

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Abstract

We developed silver-doped $Cd_{1-x}Ag_xO$ thin films (where x = 0, 0.01, 0.02, 0.03 and 0.04) on amorphous glass substrate by an automated nebulizer spray pyrolysis set-up. The XRD patterns show rock salt cubic crystal structures, and the crystallite sizes vary with respect to Ag doping concentrations. SEM images exhibited a uniform distribution of grains with the addition of Ag; this feature could support the enhancement of electron mobility. The transmittance spectra reveal that all films show high transmittance in the visible region with the observed bandgap of about 2.40 eV. The room temperature photoluminescence (PL) studies show the increase of near-band-edge (NBE) emission of the films prepared by different Ag doping levels, resulting in respective decreases in the bandgaps. The photodiode performance was analyzed for the fabricated p-Si/n-$Cd_{1-x}Ag_xO$ devices. The responsivity, external quantum efficiency and detectivity of the prepared p-Si/n-$Cd_{1-x}Ag_xO$ device were investigated. The repeatability of the optimum (3 at.% Ag) photodiode was also studied. The present investigation suggests that $Cd_{1-x}Ag_xO$ thin films are the potential candidates for various industrial and photodetector applications.

Author keywords

$Cd_{1-x}Ag_xO$ thin films | P-Si/n-$Cd_{1-x}Ag_xO$ | Photodiode | PL

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