

PROCEEDINGS OF
INTERNATIONAL CONFERENCE ON
RECENT TRENDS IN SCIENCE,
ENGINEERING & TECHNOLOGY
ICRTSET 2022

18th & 19th NOVEMBER 2022



Since 1947

EDITOR IN CHIEF
Dr.D.BRINDHA



PSG
CARE

CENTER FOR ACADEMIC RESEARCH & EXCELLENCE

Organized by

PSG COLLEGE OF ARTS & SCIENCE
Avinashi Rd, Civil Aerodrome Post,
Coimbatore, Tamil Nadu 641 014
India

In Association with

PSG Center for Academic Research and Excellence
R.No. G201, PSG College of Technology
Coimbatore, Tamil Nadu 641 004
India



PSG COLLEGE OF ARTS & SCIENCE



Accredited with A⁺⁺ Grade by NAAC (4th Cycle)
College with Potential for Excellence
(Status Awarded by the UGC)

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**FOREWORD
MESSAGES**

MESSAGE

Thiru. L. Gopalakrishnan
Managing Trustee, PSG & SONS CHARITIES



It is quite gratifying to note that the Department of Physical sciences, Mathematical sciences, Life sciences and Computer sciences of PSG College of Arts & Science is hosting in International Conference on Recent Trends in Science, Engineering & Technology (ICRTSET-2022), in association with PSG CARE on 18th and 19th November 2022.

I hope that conference will have the opportunity to discuss contemporary topics that are important on both a national and worldwide level, notably in the areas of Science, Engineering and Technology.

I am confident that this event will offer academics and researchers a good atmosphere which will enable them to discuss their opinions and thoughts. My best wishes for the success of the conference with heartfelt greetings and congratulations to the organizing committee and attendees.

MESSAGE

Dr. R. Rudramoorthy
Director, PSGCARE



It is a matter of contentment and pride for all of us to organize International Conference on Recent Trends in Science, Engineering & Technology (ICRTSET-2022). We have been thinking about organizing a conference for quite some time and the first aspect which we had to discuss was that would we be able to make it meaningful and fulfill the expectations of the participants and the aspirants. This took us around a year to think over the issues to be floated, the format, the key participants, their orientation, and so on.

I believe ICRTSET-2022 is a strong platform for discussions on the recent advancements in this field, and it plays a crucial role to provide sophisticated analytical instrument support to the researchers from universities, national laboratories and also industries all over India and abroad.

I am sure the technical and scientific program of the conference would certainly give the delegates an opportunity for fruitful discussions and stimulating interactions. I would like to extend my best wishes for the success of the conference in achieving its objectives.

MESSAGE

Dr. T Kannaian
Secretary



The announcement that the "International Conference on Recent Trends in Science, Engineering & Technology (ICRTSET-2022)" will be held on November 18th and 19th, 2022, makes me tremendously delighted. The ICRTSET is a venue for gatherings of international researchers, scientists, and experts in a variety of technology research and development fields. The conference offers a venue for gathering and in-depth discussion on topics pertaining to several disciplines between worldwide specialists.

I'm expecting eminent speakers will cover virtual reality from a range of perspectives. The gathering will surely offer adequate solutions to the problems facing the world, I have the honour to say.

I congratulate the team members and participants for their efforts in organizing and participating in this conference and wish the conference all the success.

MESSAGE

Dr. D. Brindha
Principal



It gives me immense pleasure to be a part of this hosting team of “International Conference on Recent Trends in Science, Engineering & Technology (ICRTSET-2022)”. The conference aims to foster and build a strong network among researchers, scientists, and practitioners from different disciplines globally, disseminate knowledge about cutting-edge technological advancements to the participants, discuss information in relevant domains with the motive of seeding future developments, and give an opportunity to the participants to exchange latest research results, ideas and applications in the emerging areas of science and technology.

I am sure that, with eminent speakers sharing their experience and perspectives, this international conference (ICRTSET-2022) will foster as well as exaggerate the research culture among academia and industry facilitated by sprinkled out ideas by an exchange of the intellect during the conduct of the conference.

With research being imperative in the progress of our society it has become an integral part of our life. My message to all participants is to carry out and participate more on research, and development in the area of engineering, and technology.

I would like to use this opportunity to extend a warm welcome to all of the conference attendees and thank all the writers and keynote speakers for their support and cooperation on behalf of the entire ICRTSET-2022 team.

My best wishes to all participants who have joined ICRTSET-2022 and may this be one of the fruitful exploits, to engage and encourage professional synergies and lifelong learning.

I welcome you all to PSG College of Arts & Science and hope that this conference will act as a medium for all of us present here to ponder upon the topic of discussion, challenge us to strive towards it and inspire us at the same time.

With strong belief that this conference will stand as a great source of knowledge and researchers, with great pleasure and pride, I convey my best wishes for the success of ICRTSET-2022

Thank you!

MESSAGE

Dr. A. Anguraj
Vice Principal
(Academic Affairs – Self Financed)



The International Conference on Recent Trends in Science, Engineering & Technology (ICRTSET-2022), a two-day international conference will take place at PSG College of Arts & Science on November 18th & 19th, 2022. The conference's clearly stated objective is to effectively build a noteworthy landmark by utilizing activities that include professional talks from exceptional achievers and presentations by researchers in relevant subjects in an atmosphere of positive contact and sharing.

The topics specified will serve as a platform for showcasing cutting-edge technology and enable us to advance by accessing knowledge bases and learning from a pool of knowledgeable academics.

I would like to express my sincere gratitude to the distinguished invited speakers and participants for their presence and contributions to the conference. I also thank all the review committee members for their efforts in ensuring a rigorous review process to select high quality papers.

I hope all the participants will benefit from the technical contents of this conference and wish you a very successful conference. I owe a great deal of gratitude to the team members who worked so diligently to make this conference a success.

MESSAGE

Dr. M. Jayanthi
Vice Principal
(Academic Affairs – Aided)



I'm glad to invite you all to the International Conference on Recent Trends in Science, Engineering & Technology (ICRTSET-2022), which will be held in Coimbatore, India, on November 18th and 19th, 2022.

PSG Campus is a hidden treasure trove of information, creativity, and technology. The conference's activities are geared toward researchers, practitioners, professionals, educators, and students who are enthusiastic to share their knowledge, creative solutions to problems, and perspectives on current trends and future directions in engineering, science, and technology.

In this constantly evolving subject, this conference provides a singular arena for the sharing of creative ideas, technical know-how for technological breakthroughs, etc. I'll end by sincerely thanking and appreciating everyone. I'm hoping the ICRTSET-2022 is a huge success.

MESSAGE

Dr. M. Uma Rani
Faculty-in-charge
(Student Affairs – Self Financed)



It is quite gratifying to note that the department of physical sciences, mathematical sciences and life sciences of our college is hosting an International Conference on Recent Trends in Science, Engineering and Technology (ICRTSET 2022), in association with PSG CARE.

Putting on such an event now strengthens our goal creating a space where thoughts about technology breakthroughs can be exchanged. I wish the conference would be able to deliberate on current issues of national and international relevance, particularly in the field of Science, Engineering and Technology.

I congratulate the entire team for the meticulous work they've done to bring the much-needed brightness and vibrancy to this international meeting. I hope that they will continue to carry out this purpose with even more vigor in the years to come and send them my best wishes for the smooth running of the entire event.



PSG COLLEGE OF ARTS & SCIENCE

COIMBATORE – 641 014



Dr. D. Brindha
Principal,
PSG College of Arts & Science

PREFACE

PSG College of Arts & Science established in 1947, is a premier ranking educational institution that provides quality higher education on par with international standards in the state of Tamil Nadu, India. Being the largest Higher Education Institutions of South India, PSG CAS offers 43 Undergraduate Programmes, 4 BVoc Programmes, 29 Postgraduate Programmes, 1 Five year Integrated Postgraduate Programme, 3 PG Diploma Programmes, M.Phil and Ph.D Programmes are offered in 24 Disciplines. In addition to this, 12 Career Oriented Add-On courses are offered for enhancing the life skills of students. Excellence in research and teaching has been the hallmark of PSGCAS ever since its inception.

It's our great pleasure to inform you that the college is organizing "International conference on Recent trends in Science, Engineering and Technology – ICRTSET2022" on 18th & 19th November 2022. The conference will provide an opportunity for the young researchers to have interactions with eminent scientists from all over India who will focus on related state-of-the-art technologies in the areas of the conference. I am very glad to convey that several invited talks and around 200 research papers will be presented for discussions in this conference.

I take this opportunity to express my heartfelt thanks and gratitude to our Honorable Managing Trustee, PSG & Sons Charities for his whole hearted support for the successful conduct of this event. I sincerely thank our Secretary, Director (PSG CARE), and Vice-Principal (Academic and Student affairs) for providing valuable guidance to lead this conference to a grand success. We also took initiative work to publish the presented papers in Scopus indexed international journals.

I am greatly obliged to the plenary speakers, invited speakers, delegates and participants from various Research Centers, Universities and Institutions for their interest to present their research work in our Conference. I express my heartfelt content to all the members of the Advisory Committee and Reviewers for their kind and valuable help. I would like to extend my appreciation to the members of Organizing committee, Colleagues, Technical Staff members and to our students for their priceless contributions and hard work in all the phases of conference work.

Dr. D. Brindha
Convener – ICRTSET2022

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ICRTSET 2022 – SCHEDULE

DAY – 1 (18.11.2022 – Friday)		
09.30 – 10.30	Inaugural Function	GRD Auditorium
10.31 – 10.45	Photo Session	
10.46 – 11.00	Tea Break	
11.01 – 12.00	Key Note Address <i>Dr. Mohammad Abul Hasnat</i> <i>Professor, Department of Chemistry, Shahjalal University of Science & Technology, Bangladesh</i>	GRD Auditorium
12.01 – 13.00	Lunch Break & Poster Session – 1	
13.01 – 14.00	Invited Talk – Session 1	
	Biological Science <i>Dr. Arockiasamy Arulandu</i> <i>Group Leader, Membrane Protein Biology International Centre for Genetic Engineering and Biotechnology, New Delhi 110 067, India</i>	
	Computational Science <i>Dr. C. Balakrishnan</i> <i>Associate Professor, Department of Computer Science CHRIST – Yeshwanthpur Campus Bengaluru- 560073, Karnataka, India</i>	
	Mathematical Science <i>Dr. R. Roopkumar</i> <i>Professor, School of Mathematics & Computer Sciences Central University of Tamilnadu, Thiruvavur, India</i>	
	Physical Science <i>Dr. K. Jeganathan</i> <i>Director, Centre for Nanoscience & Nanotechnology, Bharathidasan University, Tiruchirappalli-620 024, Tamilnadu, India</i>	
14.01 – 15.30	Oral Presentation Session – 1	
15.31 – 15.45	Tea Break	
15.46 – 17.00	Oral Presentation Session – 2	
End of the Session		

ICRTSET 2022 – SCHEDULE

DAY – 2 (19.11.2022 – Saturday)		
09.30 – 10.30	Invited Talk – Session 2	
	Biological Science	
	<p><i>Dr. P. Sankar Ganesh</i> <i>Associate Professor, Department of Biological Sciences Birla Institute of Technology & Science, Pilani Hyderabad Campus, Medchal District, Telangana, India</i></p>	
	Computational Science	
	<p><i>Dr. S. Santhoshkumar</i> <i>Assistant Professor Department of Computer Science Alagappa Univeristy - Karaikudi, Tamilnadu, India</i></p>	
	Mathematical Science	
	<p><i>Dr. Sunil Jacob John</i> <i>Professor of Mathematics, National Institute of Technology Calicut, Kerala, India</i></p>	
	Physical Science	
	<p><i>Dr. P. Thangadurai</i> <i>Raman Fellow, Fellow of Academy of Sciences Associate Professor, Centre for Nanoscience & Tech., Pondicherry University, Puducherry 605 014, India</i></p>	
10.31 – 10.45	Tea Break	
10.46 – 12.00	Oral Presentation Session – 3	
12.01 – 13.00	Lunch Break & Poster Session – 2	
13.01 – 14.45	Oral Presentation Session – 4	
14.46 – 15.45	Key Note Address	GRD Auditorium
	<p><i>Dr. Ganeshalingam Sashikesh</i> <i>Professor, Department of Chemistry University of Jaffna, Jaffna, Sri Lanka</i></p>	
15.46 – 16.00	Tea Break	
16.01 – 16.45	Valedictory Function	GRD Auditorium
16.46 – 17.00	Certificate Distribution	
End of the Session		

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3	Circular Economy of Municipal Solid Waste Landfill Leachate: A blessing in disguise Prof. P. Sankar Ganesh
4	Structure-guided drug discovery targeting oxidized low-density lipoprotein (oxLDL) receptor LOX- for novel cardiovascular therapy Dr. Arokiasamy Arulanandu
5	Materials Analysis Through Electron Microscopy Dr. P. Thangadurai
6	Nitride Semiconductor Nanowire-based Solar-blind UV Photodetectors Dr. K. Jeganathan
7	Homology Theory for data Analysis Dr.Sunil Jacob John
8	Fourier Transform Dr. R. Roopkumar
9	Recent trends in Data Science and Data Engineering Dr.C.Balakrishnan
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**INVITED
TALKS**

Fabrication of thin film based electrodes to drive several electrochemically irreversible reactions

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Synopsis

This is the compilation of research works that emphasises on the development of thin film-based electro-catalysts to study electro-oxidation of various species e.g., ethanol, hydrogen peroxide, catechol, and paracetamol. The brief overview of each investigation is separately given below.

1. Electro-oxidation of ethanol using IrO_x-Pt electrode

Pt is widely acknowledged as an excellent catalyst to perform electrochemical oxidation of ethanol. But its activity often decreases over time due to irreversible adsorption of intermediate species, mainly, carbon monoxide (CO). To get rid of CO poisoning, a simple catalyst, IrO_x-Pt (iridium oxide film deposited on platinum electrode), was developed via cycling from 0 V to +1 V vs. Ag/AgCl (sat. KCl) in Ir₂O₃.xH₂O colloidal suspension for 10 incessant cycles at scan rate of 0.1 V s⁻¹. Cyclic voltammetric analysis revealed that the activity of pure Pt catalyst in ethanol oxidation reaction (EtOR) was around 1.3 times higher than that on IrO_x-Pt but the CO-tolerant ability of Pt catalyst was around 3.5 times less than IrO_x-Pt. The stability test of Pt electrode also revealed that the activity of Pt electrode drastically decreased within 3 consecutive cycle. In case of IrO_x-Pt, the stability test revealed that the current density related to EtOR remained almost unchanged upon 500 incessant cycling, whereas almost 50% activity of Pt electrode dropped upon similar experimental condition (see **Fig. 1**).

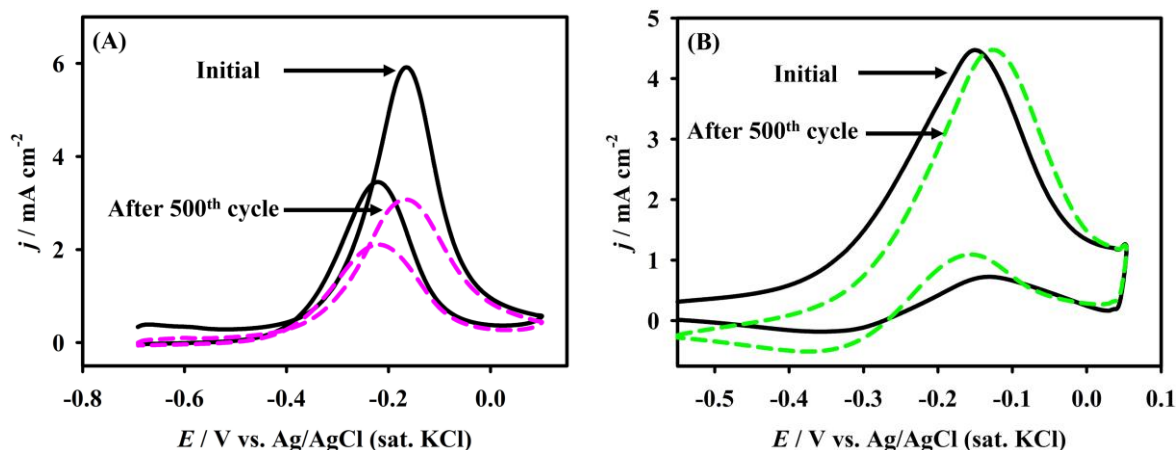


Fig. 1. (A) Comparative cyclic voltammograms of bare Pt in 0.1 M N₂-saturated NaOH solution having 0.25 M ethanol at 0.1 V s⁻¹ recorded initially and after 500 incessant cycling in 0.25 M ethanol solution, (B) Comparative cyclic voltammograms of IrO_x-Pt in 0.1 M N₂-saturated NaOH solution having 0.25 M ethanol at 0.1 V s⁻¹ recorded initially and after 500 incessant cycling in 0.25 M ethanol solution.

2. Electrocatalytic oxidation of H₂O₂ using GCE/Nafion/Ni

Nickel (Ni)-based catalysts are extensively used to perform electro-oxidation of H₂O₂. But Ni particles or glassy carbon electrode modified with Ni (GCE/Ni) loss their activities after a single cyclic voltammetric (CV) run. Consequently, frequent cleaning actions are required to re-activate the electrodes, which causes troubles and sometimes inconsistent results are obtained during the oxidation of H₂O₂ (see **Fig. 2(A)**). To improve the problem, Nafion polymer was incorporated onto GCE surface prior to electrodeposition of Ni particles. The voltammetric analysis revealed that the performance was improved tremendously due to nafion incorporation (see **Fig. 2(B)**). Utilizing the as developed catalyst, the detailed oxidative pathway of H₂O₂ on GCE/Nafion/Ni was probed by analysing mass transfer dependent cyclic voltammograms in static condition and hydrodynamic linear sweep voltammetry. The total number of electrons transferred was found to be two which was calculated by analysing the hydrodynamic voltammograms. The first electron transfer step determines the overall reaction rate with $k^o = 2.71 \times 10^{-4} \text{ cm s}^{-1}$ and $E^o = -0.078 \text{ V}$.

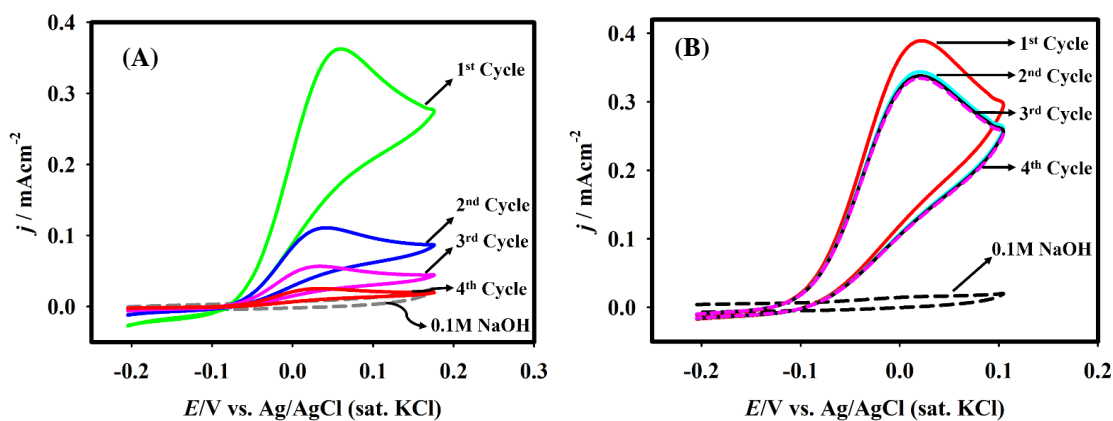


Fig. 2. Consecutive cyclic voltammograms of 2 mM H₂O₂ in 0.1 M N₂-saturated NaOH solution recorded at a scan rate of 0.05 V s⁻¹ using GCE/Ni (A) and GCE/Nafion/Ni (B) electrode.

3. Electrocatalytic oxidation of catechol using IrO_x-ITO electrode

Catechol is extracted from the wastes of oil refineries which is source of o-benzoquinone, the starting material for many organic syntheses. Catechol can produce o-benzoquinone by releasing two electrons via a reversible reaction which could be exploited for fuel cell construction from the view of green chemistry as no CO/CO₂ are produced as byproduct. Thus, for conversion of catechol into o-benzoquinone is crucial

and requires a robust catalyst. In this regard, we fabricated iridium oxide (IrO_x) immobilized indium tin oxide (ITO) surface for efficient electrocatalytic oxidation of catechol. The Ir(III) species involves one electron transfer redox reaction on the ITO surface and the conversion of Ir(III) to Ir(IV) has been identified to catalyze catechol oxidation reaction through Tafel slope analysis (see **Fig. 3**). The similarity of Tafel slope values (152 mV dec^{-1}) ensures that Ir(III) to Ir(IV) electron transfer catalyzed the catechol oxidation reaction. Therefore, considering above results, the following reaction mechanism is suggested for catechol oxidation reaction over IrO_x -ITO surface.

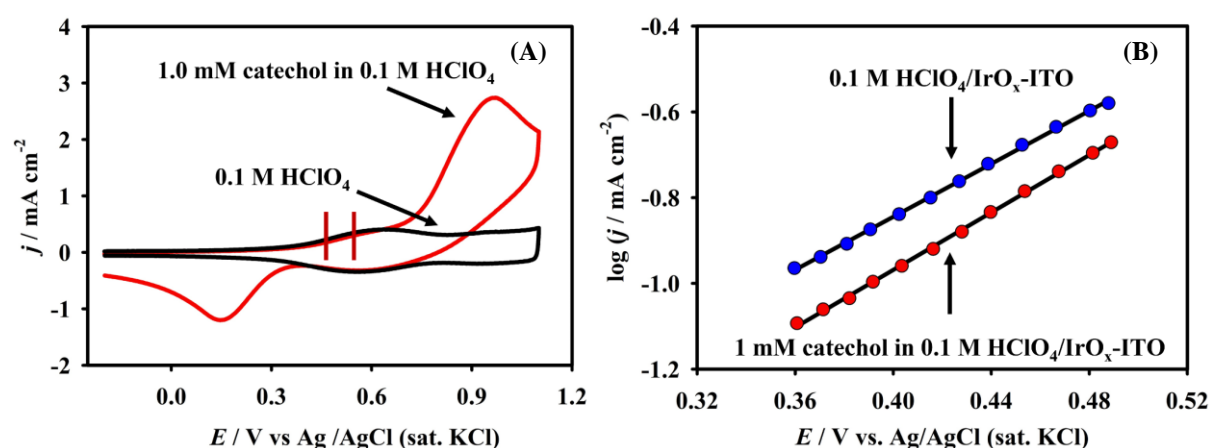
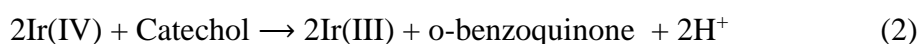
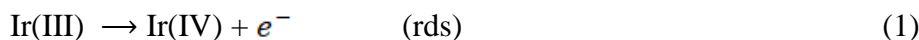


Fig. 3. (A) Cyclic voltammogram of 0.1 M HClO_4 and 1.0 mM catechol in 0.1 M HClO_4 recorded using IrO_x -ITO electrode at a scan rate of 0.05 V s^{-1} . (B) Tafel analysis of polarization curves of 0.1M HClO_4 in absence and in presence of 1 mM catechol. Experimental conditions are same as mentioned for Fig. 3(A).

4. Electrochemical oxidation of paracetamol using $[\text{I}_{(\text{ads})}|\text{Au}(\text{pc})]$ electrode

Irreversible adsorption of paracetamol (PCT) makes $\text{Au}(\text{pc})$ surface unfeasible for studying PCT oxidation reaction. This limitation of $\text{Au}(\text{pc})$ surface could be eliminated simply by iodide (I^-) adsorption. It was noticed that the spontaneous I^- adsorption blocks PCT adsorption sites on $\text{Au}(\text{pc})$ surface, which additionally improves PCT oxidation reaction by increasing electron transfer rate. Iodine adlayer/film (I -adlayer) formulated Au electrode ($[\text{I}_{(\text{ads})}|\text{Au}(\text{pc})]$) facilitated PCT electro-oxidation via an alternative diffusion-controlled pathway with an anodic electron transfer coefficient (β) of 0.47 and heterogeneous rate constant (k^0) of 0.0911 cm s^{-1} . The sensing experiments revealed that the $[\text{I}_{(\text{ads})}|\text{Au}(\text{pc})]$ electrode attained linear dynamic range from 4.5 to 1600 μM of PCT. The obtained sensitivity and limit of detection (LOD) of the $[\text{I}_{(\text{ads})}|\text{Au}(\text{pc})]$ electrode surface was determined to be $8.37(\pm 1.6) \times 10^{-4} \text{ mA cm}^{-2} \mu\text{M}^{-1}$ and $0.65 \pm 0.02 \mu\text{M}$, respectively (see **Fig. 4**). The formulated $[\text{I}_{(\text{ads})}|\text{Au}(\text{pc})]$ electrode was applied to quantify the relative PCT percentage

in commercial tablets using batch injection analysis supported by chronoamperometry. Obtained relative percentage closely matched with the corresponding analysis performed with Raman spectroscopy.

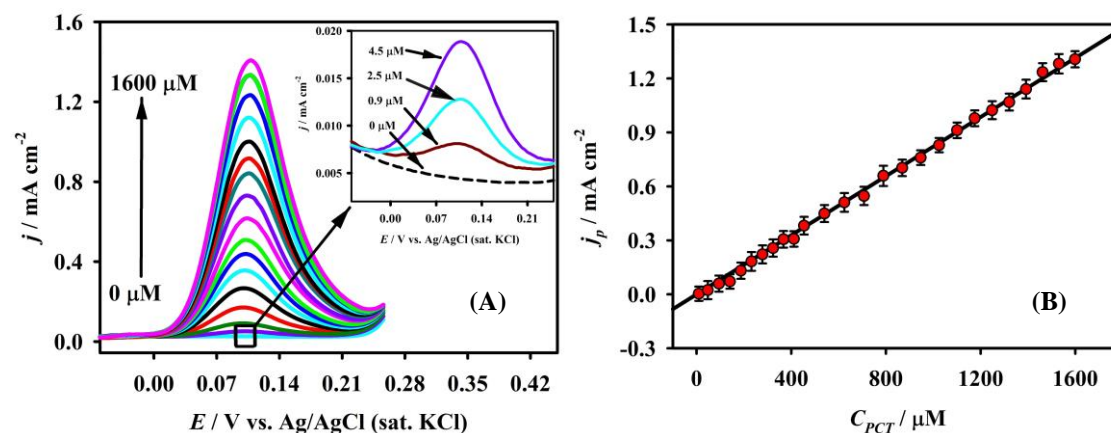


Fig. 4. (A) Differential pulse voltammograms (DPV) of $[I_{(ads)}]Au(pc)$ electrode in 0.1 M NaOH solution (N_2 -sat.) containing different concentrations of PCT (inset represents DPVs at low concentration of PCT(0, 4.5, 9.5, 47.4 μM)); (B) Variation of peak current densities (j_p) with the varied concentrations of PCT (4.5 to 1600 μM).

Removal of phenolic compounds in aqueous solutions by Palmyra kernel shell activated Carbon

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Abstract

Phenol is one of the most prevalent contaminants discovered in water bodies. The adsorption process is gaining popularity as a viable method of removing phenolic chemicals from contaminated aquatic resources. The elimination of phenolic chemicals using Palmyra kernel shell activated charcoal has been extensively investigated. The removal effectiveness of Palmyra kernel shell charcoal was calculated using physically, chemically (H_3PO_4 and NaOH) and magnetically activated Palmyra kernel shell charcoal for various amounts of phenolic components and varying adsorption durations. According to this research study,

physically activated charcoal has a much higher removal efficiency than other activated charcoal. These findings show that physically activated charcoal is easily used to remove phenolic compounds from polluted water resources. Adsorption kinetics were discovered to follow a pseudo-second-order kinetic model. Freundlich, Langmuir, and Temkin isotherm models were used to interpret the experimental results. Several kinetic formulas were utilized to evaluate the adsorption kinetics of phenolic compounds using various activated charcoals derived from Palmyra kernel shells. The experimental results are consistent with the Freundlich isotherm model. All of the activated and non-activated Palmyra kernel shells absorbed the phenolic chemicals, and the value of $1/n$ was found to be between 0.692 to 0.869. Scanning Electron Microscopy (SEM) is a technique used to characterize the surface morphology of adsorbents before and after adsorption.

Keywords: Agrochemicals; Phenolic compounds; Activated charcoal; Contaminated water; Adsorption; Isotherm studies; Surface morphology

Circular Economy of Municipal Solid Waste Landfill Leachate: A blessing in disguise

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Abstract

The generation of municipal solid waste (MSW) has been increasing globally in the last two decades and is expected to be 3.4 billion tonnes by 2050. The commonly used method for MSW treatment/ disposal is landfilling or open dumping. Such a practice generates a hazardous liquid termed landfill leachate (LL) which requires treatment before disposal into the environment. Depending on the landfill's age, operational status, and the type of MSW discarded, the characteristics of LL substantially vary. Hence, treating LL is challenging and has been a focus research area of environmental management. However, the available information is discrete because most studies have reported only one or a few aspects of MSW-LL treatment. Hence it is imperative to conduct a comprehensive characterization, toxicity assessment of LL and explore its treatment options. Biological treatment of LL is challenging because of its toxic nature. However, with appropriate pre-treatment, LL

can be bioprocessed, thereby meeting regulatory norms. Among the available biological treatment options, anaerobic digestion is promising because energy can be harnessed as methane-rich biogas. However, the high concentrations of ammoniacal nitrogen and humic substances resist the anaerobic digestion of LL. Subjecting LL to simultaneous partial nitrification, anammox and denitrification (SNAD) process reduces the ammoniacal nitrogen concentration in LL, and the pre-treated LL can be readily treated through anaerobic digestion. Through the combined treatment, organic substances in the LL are majorly converted to methane. The energy from methane can be harnessed and used for various applications such as electricity generation and as a supplement to cooking gas. Such a treatment approach guarantees a circular economy of landfill leachate treatment and ensures sustainable MSW management and environmental protection.

Keywords: Municipal solid waste, Landfill leachate, Toxicity, Physicochemical characterization, Anaerobic digestion, Circular economy

Structure-guided drug discovery targeting oxidized low-density lipoprotein (oxLDL) receptor LOX-1 for novel cardiovascular therapy

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Abstract

Cardiovascular diseases (CVDs) are responsible for greatest number of deaths globally. According to WHO, 17.9 million deaths were reported in 2019 which accounts for 32% of all deaths, out of which 85% were due to heart attack and stroke. Atherosclerosis is the underlying reason for CVDs and stroke that involves lipid deposition in the arteries

(atherosclerotic plaques) causing restricted blood flow. Rupturing of these plaques causes heart attack (myocardial infarction) and stroke by forming thrombus. Oxidized low-density lipoprotein (Ox-LDL) plays a key role in the initiation and progression atherogenic process. Lectin-like ox-LDL receptor-1 (LOX-1) [1], a scavenger receptor present on vascular endothelial cells, macrophages, smooth muscle cells, and platelets, facilitates internalization of ox-LDL leading to atherosclerotic plaque formation. Existing data points towards LOX-1 as a potential target for novel anti-atherosclerosis therapy [2-3]. However, no approved therapeutics targeting LOX-1 are known. Using computational tools, we first identified a potential druggable site on the extracellular C-terminal domain (CTLD) of LOX-1. Then, using structure-based screening and molecular dynamics we have identified and short-listed molecules from chemical libraries for further validation with a combination of surface plasmon resonance, cell-based ox-LDL uptake assay and complex crystal structure. Our data clearly shows that LOX-1 is druggable [4]. Further studies are being performed to a) decipher the mechanistic details of ox-LDL uptake inhibition by the small molecules for lead development and b) validate the shortlisted molecules *in vivo* using ApoE^{-/-} mouse model of atherosclerosis.

Keywords: Atherosclerosis; ox-LDL receptor; LOX-1, scavenger receptor; drug discovery.

[1] Sawamura, T., Kume, N., Aoyama, T., Moriwaki, H., Hoshikawa, H., Aiba, Y., ... & Masaki, T. (1997). *Nature*. 386(6620), 73.

[2] Mehta, J. L., Sanada, N., Hu, C. P., Chen, J., Dandapat, A., Sugawara, F., ... & Sawamura, T. (2007). *Circ. Res.* 100(11), 1634.]

[3] Pothineni, N. V. K., Karathanasis, S. K., Ding, Z., Arulandu, A., Varughese, K. I., & Mehta, J. L. (2017). *J. Am. Coll. Cardiol.* 69(22), 2759.

[4] Tomar, A., Sahoo, S., Aathi, M., Kuila, S., Khan, M. A., Ravi, G. R. R., ... & Arockiasamy, A. (2022). *BBRC*. 623, 59-65.

Materials Analysis Through Electron Microscopy

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Recent development in material's research demands high performing analytical tools to understand the materials better. In particular, development of nanoscience and technology, nano-electronic devices require high-end imaging technique to understand their function correlated with their microstructure. There comes an electron microscopy, which is an imaging and analytical tool at high resolution. Electron microscopy uses electron beam to probe the materials. Wave nature of electron makes the possibility to use the electron in microscopy. It is used to image materials with sub-nanometer resolution. Due to its high resolution, the electron microscope can resolve atoms in materials and one such atomic resolution image is presented in Fig. 1. Insert of the Fig. 1 shows the electron diffraction pattern acquired from the same sample. In addition to image, analytical methods such as energy dispersive spectroscopy, wavelength dispersive spectroscopy, electron energy loss spectroscopy can also be performed in the electron microscope to understand the chemical nature of the materials. This talk will introduce the basics of scanning electron microscopy (SEM) and transmission electron microscopy (TEM) for the analysis of various types of materials. Chemical analysis of the materials will be highly focused.

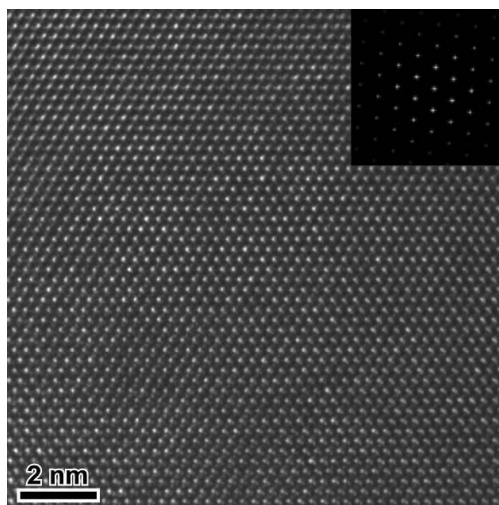


Figure 1. Transmission electron micrograph acquired from the spicule of a sea-urchin, and the spicule is made of single crystalline of CaCO_3 crystal. Insert is the electron diffraction pattern acquired from the image.

Nitride Semiconductor Nanowire-based Solar-blind UV PhotodetectorsN Anbarasan and **K Jeganathan***

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The electronics sensors based on nanomaterials that can operate independently, and sustainably under self-bias are an indispensable component in today's energy-related technology. For example, photodetectors (PDs) are optoelectronic sensors, displaying a prospect in many applications such as space communications, Ozone leak detection, smoke detection, electronic industries, biomedicine and environmental protection, spectral science etc. The photodetectors have been conceptualized from the photoelectric effect whereas the photons as packets of electromagnetic radiation can be converted into electrical signals. Recently, extensive progress has been achieved in group III-Nitrides semiconductors such as GaN, AlGaIn, AlN, AlGaIn/GaN, for developing the UV PDs. On the other hand, III-nitrides (Al, Ga, In) N are direct bandgap semiconductors with tunable bandgap from 6.2 to 0.6 eV and their alloys can be used to fabricate broad-band photodetectors, which covers UV, visible, and IR regions of the light spectrum. Here, we studied the performance of p-GaN nanowires for the photodetection of 325 nm UV light. Quasi-aligned p-GaN nanowires (NWs) were grown on n-Si (1 1 1) substrate by halide chemical vapour deposition (HCVD) using MgCl₂ precursor and followed by low-energy electron beam irradiation to activate the Mg acceptor doping in GaN NWs. The hybrid p-n heterojunction photodetector demonstrated a high responsivity of 134 - 255 mA W⁻¹ and detectivity of 3.73 - 1.7 × 10¹³ Jones at various applied potentials under 325 nm UV laser excitation source with an irradiated power intensity of 25 mW cm⁻². The fabrication of p-GaN NWs by Vapour Liquid Solid (VLS) approach, the PD device process, and the characterization results will be presented in detail.

Homology theory for Data Analysis**Dr.Sunil Jacob John**

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There are GBmany sources of high dimensional data which are believed to be structured but are hard to visualize. Our goal will be to extract information or patterns out of this high dimensional data using some very fundamental notions of algebraic topology like simplicial complexes. Persistent homology is a recently developed tool for this purpose. Small signals or features, often regarded as noise, need to be eliminated for de-noising or smoothing images and other records of observation. This is more important in situations where the space is not a fixed one and mostly depends on the scale of the observation. These themes will be introduced with suitable examples of typical high-dimensional data sets derived from natural images.

Emergence of Augmented Analytics : New Era of Insights Begins**Dr. C. Balakrishnan**

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The world is changing into a data driven world, and the data is now shaping up beyond big data. Countless devices are connected to each other and producing new data sets every passing day and minute. Identifying potential data points, collecting data, and storing it in a highly secured place have been a need of the hour. In this regard, data analytics practices and rapid adoption of AI/ML technologies in the workflow are gaining the momentum. This perfect blend of different AI capabilities such as, Machine Learning, Natural Language Query/Processing/Generation (NLP/NLQ/NLG), and other technologies like Computer vision (CV), AR/VR with analytics practices is termed as Augmented Analytics. This augmented analytics is especially useful in extracting valuable data insights towards creating dynamic

narratives to describe the happening in data. The Gartner, Inc. defined the Augmented Analytics in its IT Glossary as follows, “*Augmented analytics is the use of enabling technologies such as machine learning and AI to assist with data preparation, insight generation, and insight explanation to augment how people explore and analyze data in analytics and BI platforms. It also augments the expert and citizen data scientists by automating many aspects of data science, machine learning, and AI model development, management and deployment.*”

In Augmented analytics, AI and other technologies used to reduce the manual processes in the entire cycle of data analytics. Once the insights are generated, business users can leverage these insights across the workflow and can transform the insights into actionable decisions. Hence, throughout the augmented analytics practice, AI empowers the data analytics process by simplifying the insight discovery activity and provides the noteworthy trends and details without a specific user query.

This presentation aims at explaining the evolution of Augmented Analytics from the conventional Business Intelligence/Data Analytics and the technologies need to understand to sustain in this surge of Augmented Analytics era.



**CONTRIBUTORY
PRESENTATIONS**



**COMPUTER
SCIENCES**

Secure Smart – Cloud:Architecture for Privacy Preserving in Cloud using Machine Learning

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Abstract

Cloud Computing, a type of interpersonal computing offers services on demand. There arise numerous vulnerabilities and threats that jeopardize the authentication of the cloud services. Security services remain prevalent despite of standard policies offered by service providers, especially on public cloud. An encryption service is one of the conventional ways to protect the plain data, by converting it into inarticulate form. This paper brings an interesting application service that provides security as a service to the users. This innovative service works based on a symmetric key encryption scheme. Encryption keys in the cryptographic process reveal the quality of encryption. Multiple keys are involved in this proposed encryption process, among them, one interesting key generation is from hybridization of improved cipher block chaining encryption operation and another from Machine Learning algorithm. Motivation for designing this hybrid algorithm is to minimize the execution time and storage space capacity. The experimental analysis is performed for multimedia files, including plain text, images. Performance of the proposed encryption algorithm is analyzed using various metrics that reveals the quality and strength of the algorithm in spite of various attacks. Evaluation reports state that this application service relics potential for authenticating multimedia files with better satisfaction while out-sourced as application in cloud computing environment.

Keywords: *Security-as-a-service, Improved encryption algorithm, Machine Learning Algorithm Multimedia files, Outsourcing, Public Cloud, local optimization, symmetric key encryption.*

Domain Specific Terminology Project for Students of French-II At PSGCAS**Swapna Ghosh¹, J. Mahalakshmi²***Assistant Professor¹, Department of French, Assistant Professor², Department of MCA,
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Our research work is designed with the objective of creating and distributing a basic, specialized and selective terminology to all students, coming from different domains, who study French at PSG College of Arts & Science. We have chosen our data based on a linguistics corpus. The focus of our research work consists of identifying words used by the students during the course of study in their particular domain. The objective of this research work is to develop specific terminology, an e-content for the French-II course in our college. This will be a supplementary to the existing course content. The article focuses on developing a corpus which will expand over time. The present course offered does not provide any specialized content specific to every department in the college. The objective thereby, is to provide customized terminology content for students of every department who choose to study this course. This terminology E-content will benefit the students and kindle their interest which will connect them directly to their area of interest. It will also provide them with minimal terminological base for real-life use of French. Thus, making the course real, practical, and valuable.

Keywords: *Domain Specific Terminology, Information Technology, Corpus Linguistics, Cloud Computing, Data Storage, French Translation.*

Beyond Robotic Process Automation: An Exploration Of Artificial Intelligence, Intelligent Process Automation, Digital Process Automation Applications - A Review On The Progression Of Automation Process Transforming The Manufacturing Industry Sector

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Abstract

A Going-over of Robotic Process Automation, Intelligent Process Automation, and Artificial Intelligence in the manufacturing industry sector are essential in the digital era. Organizations all over the world are using automation solutions capable of simulating human activities, removing repetitive work, and ultimately transforming employee jobs to a top-end by leveraging newly digitized corporate processes and technological advancements. After the pandemic, all the sectors of education, manufacturing, health care, etc., stepped towards online and automation activities. At the outset, most businesses rely on automation tools like Robotic Process Automation (RPA), Artificial Intelligence (AI), and recently Intelligent Process Automation (IPA) to cut costs, expedite procedures, and enhance the accuracy of critical business operations. The industrial sector has experienced considerable growth and technological advancement throughout the years. Technology advancements have always led to even more effective means of producing goods on a large scale. Modern companies have therefore continued to develop new applications for these instruments to help automate manual operations and boost productivity throughout the production line. Process automation in manufacturing entails the incorporation of technology into monotonous, manual tasks that were previously accomplished by individuals. Manufacturers can use a wide range of machines and robots to build items as they move through the operations, which is drastically different from automation in other sectors. In this scenario, automation will frequently encompass not only carrying out the operation itself but also getting rid of the necessity for human input during data entry. The use of machinery to automate systems or production processes is referred to as automation in the manufacturing enterprise. The ultimate objective is to increase efficiency through either increased production capacity or decreased costs, frequently both. Automation is now more commonly understood as the use of machines to reduce human effort. The paper focus on the analysis of Artificial Intelligence, Intelligent Process Automation, Digital Process Automation Applications beyond RPA, and the integration of automation applications to make manual work automation.

Keywords: *Robotic Process Automation, Artificial Intelligence, Intelligent Process Automation, Digital Process, Automation Applications, Manufacturing Industry*

A Combined Deep CNN-Lasso Regression Feature Fusion and Classification of MLO and CC view Mammogram Image

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Abstract

Breast cancer is the most frequent disease among females, and it causes a serious warning to their lives and well-being. Due to high population expansion, automatic mammography detection has recently become a critical concern in the medical industry. The emergence of computer-assisted systems has aided radiologists in making accurate breast cancer diagnoses. An automated detection and classification system should be implemented to prevent breast cancer from spreading. Breast densities vary widely among women, which causes missed cancers. In the case of breast density, the deep CNN algorithms can significantly reduce radiologist workload and improve risk assessment. The goal of this paper is to offer a deep learning strategy for identifying MLO and CC view breast cancer as malignant, benign or normal using an integration of deep convolutional neural networks (CNN) and feature fusion of LASSO regression. The proposed method comprises of preprocessing, data augmentation, feature extraction, feature fusion and classification. The generated features were fed into LASSO regression for the best prediction in this system, which utilized CNN for feature extraction. The fused features were then transferred to CNN's fully connected layer for mammography classification. In our experiment, a publicly available dataset CBIS-DDSM is employed. The proposed work gained an accuracy of 93.7%, specificity of 94.2%, AUC of 93.4%, sensitivity of 91.5%, and FI-score of 93.5% which is higher than multi view CNN without feature fusion based system.

Keywords: CNN, LASSO, Mammogram Cancer Classification, Regression, Feature Fusion, Breast cancer.

A STUDY ON APPLICATIONS OF NEUROMARKETING IN CONSUMER BUYING BEHAVIOUR RESEARCH AND SUSTAINABILITY WITH RESPECT TO FMCG PRODUCTS IN COIMBATORE CITY.

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Abstract

The rising demand for exploring what is inside consumers' brains and the growth of neuroscience stimulated research efforts to explore the subtle centers in the consumer's brain that is responsible for making-decisions. Neuromarketing is the study of how people's brains respond to advertising and other brand-related messages by scientifically monitoring brainwave activity, eye tracking and skin response. These neuromarketing techniques are used to study the brain to predict consumer decision-making behaviour. It's also possible to use neuromarketing to try to manipulate consumer behaviour. So these are people's emotional and cognitive responses to media or marketing stimuli. In this paper, we are going to look through the impact of,, neuromarketing and its influence on consumer behaviour in FMCG products. This helps to know about the customer's preferences for their product and thus Neuromarketing supports in sustainability through sustainable consumption, adoption og green technologies and sustainable customer decisions, bringing a new perspective to marketing research.

Keywords:*Neuromarketing, Consumer behaviour, FMCG products.*

Cognitive Informatics towards security of healthcare system

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Abstract

Advancement in technology have paved way to transform the healthcare system from maintaining manual records to accessing patients record anywhere over the internet. The applications of healthcare include sensors to monitor heart rate, blood pressure, body temperature, pulse oximetry and activity tracker. Therefore, the system is also exposed to an unattended environment and it is susceptible to various kind of attacks. Hence security is a crucial task. Various security mechanisms are employed to maintain security. Even though, rigid security mechanisms need to be employed. However, an approach that combines natural intelligence, is essential to provide a better solution and to overcome the healthcare system's security issues. Hence, Cognitive Informatics is employed to address the healthcare system's issues.

Keywords:*Cognitive Informatics, Healthcare system, physical layer, communication layer, DOS attack, Sybil attack*

THE SYSTEMATIC ANALYSIS OF THE ADVERSE IMPACT OF SMOKING ON LUNG CANCER BASED ON VARIOUS FEATURE SELECTION DATA MINING TECHNIQUES

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Abstract

Smoking represents one of the largest public health problems due to its detrimental effects on multiple organs of the human body and its association with a variety of chronic and deadly diseases. Smoking harms almost every organ of the body, causing numerous diseases and affecting the health of smokers in general. Smoking is by far the leading thread factor for lung cancer. Inhaling tobacco smoke can also damage the tiny air sacs called alveoli in lungs. These bitsy air sacs are the center of your respiratory system's gas exchange. They move oxygen into your blood, and expel carbon dioxide when you exhale. Over time, the damage to the alveoli in your lungs can lead to chronic obstructive pulmonary disease. Tobacco smoke exposes approximately 7,000 types of chemicals and 70 known cancer-causing chemicals. It is assessed that about 90 percent of lung cancers can be attributed to smoking. People who smoke are 15 to 30 times more likely to get lung cancer than non-smokers. The longer you smoke and the more often you smoke, the higher your risk. Here various data mining algorithms helped to demonstrate how the smoking habit leads to the deadly lung cancer disease. This proposed work enlightened about various feature selection techniques which were utilized to demonstrate the influence of smoking habit in lung cancer and its related diseases. The main aim of proposed work is to provide comprehensive analysis of the adverse impact of smoking habit in lung cancer diseases.

A Morphological Study On Text Mining And Machine Learning Approaches For Fake News Detection

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ABSTRACT

Social media is a platform to express one's views and opinions freely and has made communication easier than it was before. With the current usage of social media platforms, consumers are creating and sharing more information than ever before, some of which are misleading with no relevance to reality. This also opens up an opportunity for people to spread fake news intentionally. The widespread increase of the fake news generated by humans or machines causes negative influences both politically and physically. Nearly 70% of people are concerned about the propagation of fake news. It is a challenging task to evaluate the reliability of the message promptly. Even an expert in a particular domain has to explore multiple aspects before giving a verdict on the truthfulness of an article. This leads to the development of automated fake news detection tools as a crucial requirement. Our study reviews the various machine learning techniques and the necessary semantic features to detect fake news in online articles.

Keywords: *Fake News, Machine Learning, Semantic features, Social Media, Text Mining*

Assessment View On Various Machine Learning Approaches For Fake News Detection

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Abstract

Fake news is news, stories or hoaxes created to deliberately mislead or deceive readers. Mixing both believable and unbelievable information on social media has made the confusion of truth. Various data mining and machine learning approaches are applied for fake news discovery. A small account of the machine learning approaches such as Naïve Bayes, Random Forest Classifiers, Support Vector Machine and Logistic Regression are taken towards fake news detection and classification of news articles as fake or real. Further an assessment report with optimal results is produced. A Kaggle dataset was used for the experiment; it consisted of both false and true news. Performance evaluation metrics were used to measure the performance of the algorithms on the preferred dataset. The results of our experiment show the corresponding values for parameters such as highest accuracy, precision, recall, and F1_score values on each algorithm implemented.

Keywords: *Fake News, Logistic Regression, Machine Learning, Naïve Bayes, Random Forest Classifiers, Social Media, Support Vector Machine.*

An Empirical Study On Machine Learning Algorithms For Autonomous Vehicles

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Abstract

In crowded countries like India, traffic problems are a big issue because of the large population. So, autonomous driving is becoming increasingly common and has the potential to disrupt our transportation system. In addition, self-driving cars are on their way to becoming legal, but they are still not safe enough to be used in the real world due to a lack of trust. The purpose of this survey is to describe an empirical study on the implementation of autonomous vehicles using machine learning algorithms. Different algorithms are used in the implementation of self-driving cars. Accuracy is used as the evaluation metric. Road Lane Detection, Support Vector Machine (SVM) for anomalies detection, and Disparity Map was used as the algorithms. From the experimental analysis, we have observed that these machine learning models have taken less time for processing images during the autonomous mode with model accuracies of 97% for road lane detection, and SVM has shown 98% of accuracy for anomaly detection. The proposed models have outperformed baseline models with a significant difference.

Keywords : *Machine Learning, Deep Learning, self-driving cars, SVM, Road Lane Detection, Disparity Map, Accuracy.*

Transform Based Edge Feature Preserving CT Scan Medical Image Coder (EZWT - EFPIC) for Analysing CT Scan Images towards the early detection of Lung Cancer

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Abstract

With the current improvements of virtual image processing techniques and scientific technology has received several benefits. Today, all of the scientific diagnostic image processing techniques produce virtual scientific pictures, through which the healthcare specialists analyse and diagnose the abnormality. The frequent view of scientific image processing might also additionally appear simpler; however, it entails many challenges. As the scientific pictures are interconnected with human lives, the laptop aided scientific image processing structures have to be overcautious, if we want to eliminate inaccuracy rates. The utility of medical image processing techniques for the analysis of CT scan images similar to lung cancer cells is gaining momentum in current years. This paper discusses the use of a TRANSFORM BASED EDGE FEATURE PRESERVING CT SCAN MEDICAL IMAGE CODER (EZWT - EFPIC) using Computed Tomography (CT) images to help in the early diagnosis of lung cancer. We discuss and explore the design and significance of an EZWT-EFPIC-CT image processed model in cancer diagnosis.

Keywords: *CT scan, lung cancer image, EZWT-EFPIC, cancer detection, image processing, cancer diagnosis.*

Secure Data Transmission Using Elgamal Key Generation In WBAN

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Abstract

In recent years, Wireless Body Area Networks (WBANs) have been widely used in healthcare applications, such as hospital and home patient monitoring. Wireless medical data are unprotected and subject to eavesdropping, modification, impersonation and replaying attacks than the wired networks. A lot of work has been done to secure the data. The existing solutions can protect the patient data during transmission, but cannot stop the inside attack where the administrator of the patient reveals the sensitive patient data. The main contribution of this paper is securely distributing the patient data in multiple data servers and employing the Paillier and Elgamal cryptosystems to perform statistical analysis on the patient data without compromising the patient's privacy. Wireless Body Area networks (WBANs) certainly improve patient's quality-of-care without disturbing their comfort. However, there exist many potential security threats to the patient sensitive physiological data transmitted over the public channels and stored in the back-end systems. Typical security threats to healthcare applications with WBANs can be summarized as follows. Eavesdropping is a security threat to the patient data privacy. Impersonation is a security threat to the patient data authenticity. In a home care application, an attacker may impersonate a wireless relay point while patient data is transmitting to the remote

location. For this purpose this project is done using java netbeans.

AN IMPROVED HYBRID CLOUD WORKFLOW SCHEDULING ALGORITHM BASED ON ANT COLONY OPTIMIZATION

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Abstract

At present, with the enormous development of cloud-based applications, the demand of related enterprises for computing and a large number of storage resources is increasing day by day. Due to the characteristics of ultra-large scale and low cost, cloud computing has been gradually applied to complex workflow scheduling problems in various fields. The traditional scheduling algorithms have lot of limitations such as inefficient task management and unreasonable resource allocation. The workflow scheduling problem in the cloud computing environment has been proved to be an NP-complete problem. To solve these problems, this paper proposes an improved ant colony optimization workflow scheduling for workflow execution of tasks within a user-specified deadline. On this basis, a hybrid cloud deadline-constrained cost workflows scheduling algorithm under the hybrid cloud is proposed, which will prioritize scheduling execution in the private cloud, and use the public cloud to schedule part of the workflow when the task execution time exceeds the task deadline constraint. The simulation results show that the proposed workflow scheduling algorithm reduces the cost and attain faster execution time.

Keywords: *Cloud Computing, Cloud Scheduling, Improved Ant Colony Algorithm, Optimization based Cloud Scheduling.*

A Study on Applications of Machine Learning in Cancer Predication

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Abstract:

Cancer has been described as a non-homogenous disease consisting of various subtypes. The early diagnosis of a cancer type in a patient have become a necessity in cancer research, as it can simplify the following clinical management. The importance of classifying cancer patients based on their risk has led many research teams, from the biomedical fields, to study the application of technologies and their methods. Now a days, Machine Learning (ML) a domain in technology plays a greater role in cancer prediction. ML tools and techniques have been utilized as an aim to detect key features from complex datasets reveals their importance in understanding the progression of cancerous conditions. A variety of these techniques, including Artificial Neural Networks (ANNs), Bayesian Networks (BNs), Support Vector Machines (SVMs) and Decision Trees (DTs) have been applied in cancer research for the development of predictive models, resulting in effective decision making. In this, a study on these techniques were conducted over the use of ML methods that can improve our understanding of cancer progression in order for these methods to be considered in the everyday clinical practice. The predictive models here are based on various supervised ML techniques. Given the growing trend on the application

of ML methods in cancer research, few publications that employ these techniques are studies as an aim to model cancer risk or patient outcomes.

Keywords: *Prediction, Machine Learning (ML), Artificial Neural Networks (ANNs), Bayesian Networks (BNs), Support Vector Machines (SVMs) Decision Trees (DTs)*

Survey Paper On Deep Learning Algorithms For Event Recommendation

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Abstract:

This paper surveys the exploration drifts that connect the high level specialized parts of suggestion frameworks. Deep learning's progressive advances in discourse acknowledgment, picture examination, furthermore regular language handling have acquired huge consideration. deep learning innovation has become an area of interest research field in the artificial intelligence and has been applied into recommended framework. Rather than customary suggestion models, deep learning can successfully catch the non-straight furthermore non-minor client thing connections and empowers the codification of more mind boggling deliberations as information portrayals in the higher layers. In this paper, we give a complete audit of the connected exploration substance of profound learning-based recommended frameworks. Recommended system has the ability to predict whether a particular user would attend the event or not based on the user's profile.

Keyword: *User profiling, Event-based social network, Sentiment analysis,event recommendation.*

Survey On Artificial Intelligence And Its Various Applications

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Abstract

Artificial Intelligence (AI) is the most popular and emerging technology in today's world. Most of the things in the world use AI. The capacity of a machine to make decisions on its own is termed AI. This paper presents a brief survey on AI and its various emerging applications along with real-time examples. A generic analysis of AI is presented in this paper. Intelligence is the way of thinking and acting upon the environment. This might depend on the Intelligent Quotient (IQ) of a person. AI can also be used to make predictions in the future. All the intelligence can be done through programming. Learning is one of the parts of AI which makes a machine learn and then act upon real-time situations by using experience. Typically, AI is a broad field in computer science that is mostly used for

automation purposes to reduce manpower. AI helps people to make their tasks easy and efficient. There is a huge difference between Natural Intelligence (NI), Machine Intelligence (MI), and AI. There is a wide range of AI applications ranging from computer vision to expert systems.

Keywords: AI, IQ, ML, Learning, Automation.

Secure Data Transmission Using Elgamal Key Generation in WBAN

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Abstract

In recent years, Wireless Body Area Networks (WBANs) have been widely used in healthcare applications, such as hospital and home patient monitoring. Wireless medical data are unprotected and subject to eavesdropping, modification, impersonation and replaying attacks than the wired networks. A lot of work has been done to secure the data. The existing solutions can protect the patient data during transmission, but cannot stop the inside attack where the administrator of the patient reveals the sensitive patient data. The main contribution of this paper is securely distributing the patient data in multiple data servers and employing the Paillier and Elgamal cryptosystems to perform statistical analysis on the patient data without compromising the patient's privacy. Wireless Body Area networks (WBANs) certainly improve patient's quality-of-care without disturbing their comfort. However, there exist many potential security threats to the patient sensitive physiological data transmitted over the public channels and stored in the back-end systems. Typical security threats to healthcare applications with WBANs can be summarized as follows. Eavesdropping is a security threat to the patient data privacy. Impersonation is a security threat to the patient data authenticity. In a home care application, an attacker may impersonate a wireless relay point while patient data is transmitting to the remote location. For this purpose this project is done using Java NetBeans.

Significance of Cyber Security in Digital Agriculture

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Abstract

Agriculture is the most significant source of the world's food supply. It reduces the poverty and supports a backbone for the improvement of a country's economy and food security. When farmers pour water or apply fertilizer, they typically don't use any conventional measurements or processes. All of their farming operations are based on a blend of approximations, knowledge, and suggestions. The innovations in the IT domain and the ever-present web connectivity have enriched the progress of various domains as digital. The shortage of manpower, the rapidly growing population, and food demand have made the agricultural sector upgrade to digital farming/agriculture. Smart farming systems and technologies are implemented to increase control over production by monitoring the crops, plants, trees, and various agricultural parameters such as moisture, climate, humidity, pest management, and diseases. Digital agriculture is an immense, technological innovation for the sustainable production of

food in the agriculture sector. The production of food has increased in both terms of quantity and quality, yet smart agriculture technologies face numerous cyber security challenges. Digital farming faces various natural and technical threats like natural calamities, machinery problems, cyber security attacks...etc. We cannot question the nature. But the technical threats can be tackled by humans. This research article aims to systematically review the exploitable vulnerabilities and flaws affecting the smart farming. Cyber security threats and recovery strategies that are materialized in the field of digital agriculture and its future research directions are also investigated in this article thoroughly.

Analysis Of Convolutional Neural Network For Image Captioning Bot

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Abstract

Captioning images automatically is one of the hearts of the human visual system. There are various advantages in this research application which automatically caption the scenes surrounded by them and revert back the caption as a plain message. In this research, we present a model based on CNN-LSTM neural networks which automatically detects the objects in the images and generates descriptions for the images. We used various pre-trained models to perform the task of detecting objects and used CNN and LSTM to generate the captions. We used Transfer Learning based pre-trained models for the task of object Detection. This model can perform two operations. The first one is to detect objects in the image using Convolutional Neural Networks (CNN) and the other is to caption the images using Recurrent Neural Network (RNN) based LSTM. Interface of the model is developed using flask API, which is a web development framework of python. The aim of the project was to train Convolutional Neural Networks with several hundreds of hyperparameters and apply it on a huge dataset of images and combine the results of this image classifier with a Recurrent Neural Network to generate a caption for the classified image.

Keywords: CNN (Convolutional Neural Network), RNN (Recurrent Neural Network), LSTM (Long-Short Term Memory), Transfer learning.

Analysis On The Scope Of Deterministic Wallets

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Abstract

Before the introduction of deterministic wallet, the users of crypto currency faced a critical issue on tracking up and backing up their wallet transaction. The Non- Deterministic wallets generate private keys of random and independent nature, there is no similar pattern on how the keys are derived. On the other hand in deterministic wallet the private keys are originated from the same seed, hence they are related to each other. This is very helpful when there is a need of backing up the transaction or need of migrating from a wallet. All we need to do is backing up the seed from which the user can generate the family of public and private key that has been used by the user. This paper analyse the deterministic wallets merits, demerits, applications beyond the crypto currency along with the algorithm and standardisation through which the wallets are implemented.

Keywords: *Deterministic Wallets, Bitcoin, Applied Cryptography, Data Breach, Data Encryption, Blockchain*

Security Strategies In Health Science Augumented By Cryptographic Techniques

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Abstract

The exchange of medical information is greatly facilitated by the ongoing advancements in information technology and digital communication. Nowadays, the health systems are well-known and highly regarded. Medical facilities rely on them for sending and receiving the distribution of medical information across local and internet networks. Various security solutions have been proposed to people over the years, but safeguarding the patients' privacy and ensuring their safety the shared medical information. The use of encryption is one of the methods that have been employed to provide health security systems. This article reviews the most recent developments in the health systems' cryptography-based security measures. The fundamental ideas and conditions of cryptography are after presenting health systems, a review of some medical information security methods using cryptography presented throughout the past ten years. The parameters follow the measures employed to assess the implemented Techniques for cryptography have been reviewed. After that, a review of the shortcomings and current tendencies in the use of cryptography in health systems is presented. Finally, this review article's conclusions include some there are

recommendations made for additional research in this area.

Keywords: *cryptography, security, AES, RSA, chaotic encryption, lightweight encryption method, and quantum cryptography.*

Homomorphic Image Encryption

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Abstract

Various cloud storage services provide some basic image editing functionalities. An image may disclose private information about the user and most cloud-based services provide free tier plans for editing images. The security threats faced by the user primarily from Malicious behaviour where the cloud server may be interested to learn the private information contained in the images. An attacker gains access to the server and extension where all the images are stored. An image encryption and editing model is constructed based on homomorphic encryption. Homomorphic encryption is the notation used to describe the kind of encryption, which can be used to perform different arithmetic operations on encrypted data to directly obtain an encrypted result. Thus, using such encryption techniques enables the execution of specific computations, while maintaining the privacy of both the input data and the results. The idea of homomorphic computation is to perform operations on an encrypted ciphertext and the result would be the same as performing the operations on the plaintexts. In our implementation, extension of Paillier's Homomorphic Encryption (PHE) scheme is to operate over images. The algorithm is used for securing images that transmit over public unsecured channels. The Paillier cryptosystem is an additive homomorphic and probabilistic asymmetric encryption scheme. It is only partially homomorphic as it can only add encrypted ciphertexts or multiply an encrypted ciphertext by a plaintext. The homomorphic properties of this cryptosystem is demonstrated by applying a brightness adjustment transform over the encrypted image. The homomorphic property is used in this paper, which is comprised of three steps: key generation, encryption and decryption. This Paillier cryptosystem can be effective in protecting images and supporting the construction of programs that can process encrypted input and produce encrypted output.

Keywords: *Homomorphic image encryption- Paillier cryptosystem- encryption- key generation- cipher text-decryption.*

Flappy-Bird Automation Using NEAT

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Abstract

A Large number of algorithms to generate behaviours of game agents have been developed in recent years. Most of them are based on Artificial Intelligence Techniques that needed training stage. In this project, this report proposes a Minimal training strategy to develop autonomous virtual players using NEAT (Neuro Evolution of Augmenting Technologies) algorithm to evolve an agent Capable of playing the flappy bird game. NEAT was used to find the neural Network architecture that can perfectly play the game. The modelling of the Scenarios and the fitness function were set to ensure adequate representation of the Problem compared to the real game. The fitness function is a weighted average based on multiple scenarios and scenario-specific components. Coupling the minimal Training strategy, a representative fitness and NEAT, the algorithm had a short Convergence time (around 2 generations) with a low complexity network and achieved the perfect behaviour in the game. To simplify the control of the. This project is built around a unique and centralized file containing Sample names, replicates, conditions, antibodies, alignment, filtering and peak Calling parameters as well as cluster-specific paths and settings.

Keywords:*NEAT, Pygame, Reinforcement Learning*

Study On Cancer Detection Using Digital Image Processing Techniques

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Abstract

This paper is focused on a study of various biomedical scanning techniques of various tumors like brain, skin, cervix, ovarian, ovary, Thyroid. These studies also carry on various biomedical image types of X-rays, Ultrasound, CT, CAT, CAD, MRI, FTIR spectroscopy, Pap smear cytology and PET. The latest trends in biomedical image processing techniques, detection methods, and tumor area calculations of various cancers are also involved in this study. The accuracy, efficiency, processing time and quality performance parameters of SNR, PSNR, MSE and also the tumor identification using image processing techniques of noise removal, binary imaging, histogram, edge detection and segmentation are efficiently discussed. This study is helpful in analyzing the biomedical images and identification of challenges in this field.

Keywords:*Scanning Techniques, Cervical Cancer, ZSI, Feature Extraction*

A Probabilistic Adaptive Cerebral Cortex Segmentation Technique For Magnetic Resonance Human Head Scan Images

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Abstract

The total efficiency of Magnetic Resonance Imaging (MRI) results in the need for human involvement in order to detect appropriate information contained in the image. Currently, there has been a surge in interest in automated algorithms that can more precisely divide medical images into substructures than prior attempts. Instant segmentation of cerebral cortex from MRI scanned images is difficult due to noise, Intensity Non-Uniformity, Partial Volume Effects, MRI's low resolution, and the very complicated architecture of the cortical folds. In this paper, a Probabilistic Adaptive Cerebral Cortex (CC) Segmentation approach is proposed for segmenting brain areas of T1 weighted MRI of human head images. Skull stripping,

Brain Hemisphere Segmentation and CC segmentation are the three primary processes in the suggested technique. In step 1, non-Brain Cell is eliminated by a Contour-Based Two-Stage Brain Extraction Method. Step 2 details a basic BHS technique for Curve Fitting detection in MRI human head images. The left and right hemispheres are divided using the discovered Mid-Sagittal Plane (MSP). At last, to enhance a probabilistic CC structure with adjustments such as prior facts change to remove segmentation bias; the creation of express direct extent training; and a segmentation version based on a regionally various Gaussian Mixture Model-Hidden Markov Random Subject – Expectation Maximization (GMM-HMRF-EM). The underlying partial extent categorization and its interplay with found image intensities are represented as a spatially correlated HMRF within the GMM-HMRF-EM method. The proposed GMM-

HMRF method estimates HMRF parameters using the EM technique. Finally, the outcomes of segmentation are evaluated in terms of precision, recall, specificity, Jaccard Similarity (JS), and Dice Similarity (DS). The proposed method works better and more consistently than the present locally Varying MRF (LV-MRF), according to the experimental findings obtained by using the suggested GMM-HMRF-EM methodology to individuals' brain images.

Keywords: *MRI, Mid-Sagittal Plane, Cerebral Cortex Segmentation, Gaussian Mixture Model, Hidden Markov Random Field, Expectation Maximum Method.*

A Review Of Secure Smart Medical Data Sharing In The Intercloud

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Abstract

In recent years, huge amount of self-tracked health data is collected by IoT devices and has an exceptional effect on people who are using it on a daily basis, to capture and store a variety of continuous personal health data such as: physical activity, heart rate, blood pressure, body temperature, blood glucose, sleep patterns etc. At present, healthcare bodies are using cloud environment to manage the enormous amount of data coming from the IoT devices. Because it is considered to be an ultra large scale system which represents a new generation of distributed software system. It offers the ability to manage complex systems whose architecture is heterogeneous. Due to the security issues associated with single cloud users, customers are opting for “Intercloud” which can be used in many application areas, which offers enhanced cloud service because in case of single cloud, they might have limited resources and they might have some restriction depending upon the geographical location. This paper discussed about the recent works categorized as: IoT based, Cloud based, Cloud based IoT and Intercloud based. Here, we’ve compared their models and found that each model is either in a lack or in need of some advancements. In contrast, the proposed IoT based frameworks have some issues such as: limited storage, processing, resources etc., Also, in cloud computing based frameworks, low security, low customizability, high cost, network compliances are some of the other notable issues. In cloud-based IoT frameworks, they have not applied any kind of security measure to their data. At last, in the Intercloud based frameworks, some of them are not using any kind of security measures. This review paper identified that the present research works are lacking in security aspect in the domain of healthcare, IoT and Intercloud.

Keyword: *IoT, Cloud-based IoT, Intercloud, Healthcare, Data Security*

Artificial Intelligence

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Abstract

Artificial Intelligence refers to systems or machines that mimic human intelligence to perform tasks and can iteratively improve themselves based on the information they collect. AI manifests in a number of forms. A few examples are: Chatbots use AI to understand customer problems faster and provide more efficient answers. Intelligent assistants use AI to parse critical information from large free-text datasets to improve scheduling. AI is much more about the process and the capability for superpowered thinking and data analysis than it is about any particular format or function. Although AI brings up images of high-functioning, human-like robots taking over the world, AI isn't intended to replace humans. It's intended to significantly enhance human capabilities and contributions. That makes it a very valuable business asset. This paper gives a clear insight into the evolution of Artificial Intelligence, its Pros and Cons, Its applications and how it is revolutioned into the business and industrial sector.

Software for Apparel And Fashion Sector

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Abstract

Clothing – a very significant aspect of our life. It does fit to our Past, Present and Future. Attire of a person creates the first impression to anybody and everybody is aware about it. Fashion changes very fast and everyone wants to present themselves differently each time. This creates demand for apparels hugely. To meet this demand, apparel production must have speedy work. For this, role of software in this field is very much needed. In this paper, some important software used in Textile and Apparel Industries were discussed.

Keywords: *Clothing Industry, Modern technologies, Software*

An Overview Of Nano Technology In Textile Industry

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Abstract

In this recent trends, application of nanotechnology in the textile sector has increased rapidly due to its unique and valuable properties. Increasing demands of customers for durable and functional apparel manufactured in a sustainable manner has created an opportunity for Nano materials to be integrated into textile substrates. Nano technology is basically known as the manipulation, observation, understanding and controlled matter at above stated length such that the physical, chemical and biological properties of the materials can be engineered, synthesised and altered to develop the next generation of improved materials, devices, structures and systems. Applying of Nano particles at the molecular level can be used to develop the desired textile characteristics like high tensile strength, unique surface structure, soft hand, durability, fire retardancy, water repellence, anti microbial properties etc and can induce stain resistant/repellence, wrinkle resistant, static elimination and electronic conductivity to the fibres without compromising their comfort and flexibility. This review article focuses on the properties, application and recent developments of nanotechnology in textile industry in a detailed manner.

Keywords: *Nano technology, recent developments, Textiles, applications, properties*

Attribute Based Multi Layer Access Control Framework For Securing Data In Cloud Environment

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Abstract

The speedy growth of new-generation information techniques like the cloud computing and Internet of Things are the uninterrupted improvement of living standards of people, the concept of smart city has also got more attention of secure the data. However, in face of the tremendous data, a third-party platform is needed

to store and manage these types of data. Only authorized Data users (such as Data Providers) are able to log in the cloud servers and access data. Many significant advantages when using cloud servers to manage the data, it also brings some concerns, such as the security and privacy of the sensitive data. Attribute-Based Encryption (ABE) is employed to supply fined-grained access control of the data. The data owner defines the Privacy Preserving Access Control Policy (PPAC) to determine who is capable to obtain data and uploads them to the cloud servers after encrypting it using the access policy. The cipher text could be decrypted simply, if the attributes of the user meet the access policy that is defined by the valid data user. The data contains the information of sensitive and privacy data to encrypt the files in cloud server. It is a very challenging problem to secure the data as well as preserves and privacy of Data Access. The Data converted to the cipher text and store the cloud server. The Access control policy to defined, who want to be access the data and get the permission of Attribute authority to the cloud server. Key Generation is the main concept of access policy, because it only distributes the public or private key to open and receive the data. Attribute Authority (AA) is a trusted party that is responsible for generating the public parameters and private keys for the users select attributes from the attribute space and assigns to the users with different rights. Key generations to generate the access key validate the registered user to access the Privacy Preservation Access Control (PPAC) policy method.

Keywords: ABE, AA, Attribute key, PPAC.

An Analysis of Fiber Optical Network Technology in Today's Life

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Abstract

FiberOpticalNetworkisavasttechnologynowadays.Fiber-opticnetworkshavebeenusedfor periods to transmit large volumes of traffic across the nation. The index optical fiber consistsof many types such as multi-grade cataloging fibers and indexing fibers for multiple steps. At present, we are using fiber optics which are an integral part of the infrastructure of moderncommunications and can be found along roads, in buildings, in hospitals, and in machinery. In addition, will know that signal security and small size and weight are some advantages of opticalfiber. This journal will discuss the set of studies for fiber optics, which can recognize flexibletransparentfibersthatsend signals down thinfilaments of fiberglass or plastic.

A Comprehensive Analysis Of Intrusion Detection System Using Data Mining Techniques

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Abstract

An intrusion Detection System (IDS) is a critical tool in cyber security used to monitor and identify intrusion threats, and metrics. Dataset selection is crucial to ensure that the model is fit for IDS usage. This study examines current IDS research utilizing a Machine Learning (ML) approach, focusing on the dataset and ML methods. The dataset's structure might influence the ML algorithm's efficacy. The measure will thus give a quantitative assessment of ML algorithms against a specified dataset. Many researchers concentrate on recognizing IDS, which is useful in determining known intrusion attacks. However, identifying abnormal intrusions, such as new or modified intrusion attempts, might be difficult. Even though KDDCup99 and its variation NSL-KDD are about 20 years old, many researchers still utilize them for the dataset. This ongoing tendency may result in IDS stagnation as intrusion threats change with new technology and user behaviors. Furthermore, this study investigates the usable data sets using several current methods for creating a successful IDS employing single, hybrid, and ensemble machine learning techniques. The methodologies in the literature were then reviewed and contrasted using various data sets to provide a straightforward route and recommendations for successful future work

Keywords: *Intrusion Detection, Machine learning, NSL-KDD Cup Dataset, classification.*

Text/Subtitle(.Srt) To Audio Generation And Audio/Video ToSub Rip Subtitle File (.Srt)

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Abstract

Viewers prefer videos with subtitles and also videos with voice over than videos with either one or none of them and people have to either manually create them or use a third-party software to convert them on individual applications. In this research paper the algorithms and the whole process is researched to arrive at

optimal solutions. A general, above-mentioned application would allow users to create a voice over audio file from an existing **Sub Rip Subtitle file** (.srt) file or the users shall create a subtitle file in the application itself and let the system to generate a computer - voice over audio file in a single go. Likewise this application also allows the user to generate a subtitle file from a video or an audio file. So, it would be a one stop place to create and generate **Sub Rip Subtitle file** (.srt) and the computer voice over audio file and also to generate a .srt file from an audio or video.

Keywords: *Subtitle to audio, audio to subtitle, subtitle generator, audio voice over generator, srt generator.*

E-Ticket System WithNfc Tag

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Abstract

In area of information technology everyone tries to find convenient ticketing system. But voyaging through Indian ticketing system is quite possibly of the most monotonous thing on the planet. So we have developed a system for booking an E-Ticket with NFC Tag. In which we have created a website for registration using JavaScript and inserted the URL into the NFC tag. Here we have used NFC Labels to empower E-Tagging with mobile phone by simply tapping the NFC Tag. E-ticket assumes a significant part in versatile trade which doesn't requires a Booking representative as well as it saves the hour of the travellers.

Keywords: *E-Ticket, NFC Tag, JavaScript Form, NFC Enable phone.*

Textile Industry Trend Of 2022**R. Malathy,R. Geetha Devi,***Research Scholar¹, Assistant Professor², Department of Costume Design and Fashion ,**PSG College of Arts and Science Coimbatore-641014,Tamilnadu,India.***Abstract**

Worldwide, the textile sector contributes significantly to the economy. The textile business produces important goods for people all around the world, from the production of fibers to the manufacture of clothing. The market is expected to increase in size to \$266.38 billion by 2025. As we approach a new decade and continue to feel the consequences of the COVID-19 pandemic, the textile industry has evolved new trends. The textile business, like the rest of the world, is adjusting to the modern era by implementing new methods of production and distribution. The future of the textile industry and its impact on the global economy are revealed by these tendencies. Let's have a look ahead to 2022 and the most significant trends in the worldwide textile business. An increase in the interest in textiles made from natural materials is one of the most noticeable recent developments in the textile industry. In 2022, the textile sector will also see a significant shift toward non-woven textiles. Non-woven materials are linked together chemically, as opposed to woven fabrics which involve converting fibers to yarn. Non-woven materials are found in many hygienic products. The absorbency and gentleness of non-woven fabric make it a good choice for most sanitary products. Fast liquid absorption is very useful for products like diapers and sanitary napkins. In addition, steady birth rates around the world have led to a growth in demand for diapers and other baby supplies. One of the latest developments in the textile market is digital textile printing. This method is distinct from the standard textile printing procedure since it transfers a digital file's picture onto the fabric. Nonetheless, the textile industry remains a major contributor to global GDP. A few current textile fads from around the world are listed here.

Key words :*non-woven, fiber , hygienic products, digital printing*

A Unified Multilevel Satellite Image Classification Architecture Based On Deep Learning Techniques For Various Crops

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Abstract

Classification of the satellite images plays a crucial role in remote sensing. Accurate crop classification is common requirement in precision agriculture management. Towards effective classification and monitoring of various crops in the agriculture region, hyperspectral based satellite image has been employed for crop monitoring, mapping and classification on estimating of crop type, crop region , crop area and crop yield. The accurate identification of vegetation species plays an essential role in forest management, environmental monitoring, ecosystem detection, and agricultural decisions. In this paper, a unified two stage satellite image classification architecture utilizing support vector machine and convolution neural network has been proposed. The proposed architectures use vegetation index along classifiers to improve classification rate and reduce data redundancy. Vegetation index is sensitive to vegetation biological parameter. In this particular work, Indian pine dataset has been acquired in the agriculture area for multiple crop classification and mapping in the various regions. Particularly Deep Learning Methodologies are applied in second level through various blocks of segmentation to improve the severability of class pairs on spectral features which is sensitive to chlorophyll, carotenoid, and anthocyanin indicators as it contribute significantly to crop classification, yield prediction and region mapping. Performance analysis of the architecture demonstrates that proposed model produces effective results on aspect of classification error, overall accuracy and kappa coefficient on classifying the various crops in the monitoring region.

Keywords: *Satellite Image, Deep Learning, Remote Sensing, Precision Agriculture, Crop Classification, Multi-temporal image classification*

Augmenting Topic Modelling For Drug Indication And Side Effects Prediction

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Abstract

Medicines, usually referred to as drugs or capsules, are compounds that indulge, examine, or analyse disorders. The process of developing a new drug for a specific ailment is expensive and time-consuming, but the prognosis of benefits and side effects of currently available drugs

helps to recommend candidate drugs for certain ailments with little expense and effort. The recommended medications for diseases are predicted by looking at the relationships between medications and side effects, medications and genes, and medications and illnesses. In order to uncover relationships between them, textual records, works, and biomedical sources are used to abstract relationships related to medicine, genes, illness, and side effects. Many text mining-based strategies for praising medical work were anticipated. The drug recommendations and adverse effects were regularly discovered using topic modelling, machine learning, feature dependence graphs, and comparison based techniques. This article uses text mining techniques to provide a thorough analysis of imagining medication recommendations and side effects. First, distinct strategies that were identified from earlier research are thoroughly evaluated. Additionally, a proportionate investigation is completed to categorise the limitations of current methodologies and provide a proposal for further advancement in the approximation of drug signs and side effects.

An Analysis of UGC-CARE Quality Journals in Computer Science

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Abstract:

The purpose of this article is to examine computer science journals published by the UGC Grants Commission. A total of 120 journals were retrieved from the field of computer science using five keywords. An analysis of the impact factor and cite score has been conducted. This paper shows the list of best journals in the field of computer science. Faculty members of computer science streams, researchers, and computer science professionals can use it to publish their papers.

Keywords:

Artificial Intelligence, Computer Networks and communications, Computer vision and Pattern Recognition, Human Computer Interaction, Computer Science, UGC Care ,Cite Score, Impact Factors

WATERSHED DEVELOPMENTAL ACTIVITIES FOR IDENTIFYING THE SUITABLE SITES FOR LOCATION OF RECHARGE STRUCTURES USING REMOTE SENSING AND GEOGRAPHICAL INFORMATION SYSTEM GEOGRAPHICAL INFORMATION SYSTEM IN KORAIYAR 5A2B5 WATERSHED

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This study was carried out in Madukkari e1h micro watershed of Koraiyar 5A2B5 watershed for identifying the suitable sites for location of recharge structures. Toposheet of the study area were obtained from the Remote Sensing and GIS department, TNAU for further process.

The Soil Map and DEM Map was georeferenced and digitized and the thematic maps were prepared (Land use /Cover Map, Soil Map, Slope Percent Map and Stream order Map)for the

study area in the ArcGIS environment.. The ranking was assigned from 9 to 1 for the Land Use Classification Map with Fallow lands, Waste Lands or Land with scrubs with highest ranks and lowest rank for the Built up, Water bodies, Forest area etc. In case of topography, highest ranks were given to slopes of 2-10% and lesser ranks to slopes <1% and >10%. In the soil map, loamy soils with more infiltrating capacity were given highest rank and clay soils were given lowest ranks. In case of drainage map, II stream order was given highest rank, followed by III order and the remaining stream order were given lowest ranks.

After assigning suitable ranking and weightages to the various parameters, weighted overlay analysis was carried out to identify the suitable sites for water harvesting. The point location of recharge structures like Check Dams and Percolation Ponds were found in the drainage channels and area locations of Farm Ponds, Contour/Graded bunds and Bench terraces were found in the Most favorable zones using the Raster Calculator of the Spatial Analyst Tools. This methodology of using Remote Sensing and GIS as a Rapid Assessment and Planning Tool (RAPT) proves effective in watershed planning and developmental activities at a faster rate than the traditional method and can be adopted in future. Planning that requires months if done manually can be done in a few days using Remote Sensing and Geographical Information System.



**PHYSICAL
SCIENCES**

Structural, morphological, and optical properties of low energy N⁺ ion implanted PbS thin films

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Abstract:

We report the experimental results on the effect of N ion implantation on lead sulphide (PbS). PbS nanocrystallites were first synthesised by a cost-effective chemical method and then deposited on a glass substrate by the thermal evaporation method. These as-prepared thin films of thickness 500nm were implanted with N ions of 20keV and the ion fluencies were varied from 1×10^{15} to 1×10^{16} ions/cm². The impact of N⁺ ions on the structural, morphological, and optical properties of PbS was investigated by analyzing from X-ray diffraction (XRD), Raman spectroscopy, field emission scanning electron microscopy (FE-SEM), UV-Visible, and photoluminescence spectroscopy. The crystallite size of PbS was calculated from XRD using Debye-Scherrer's formula and it is found to decrease from 20 nm (pristine) to 19, 11, and 15nm respectively for ion fluences of 1×10^{15} , 5×10^{15} , and 1×10^{16} ions cm⁻². Raman analysis confirms the formation of defects at higher fluence. From optical studies, it is found that the bandgap energy increase from 1.81eV to 2.10eV by varying with ion fluences. All these results confirm the modification of physical and chemical properties of PbS with the low energy N ion implantations.

Molecular Structure And Computational Studies Of 1,2–Bis(4-Pyridyl)Ethane:2–Nitrobenzene–1,3,5–Triol – An Organic Adduct

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Abstract:

A molecular adduct crystals of 1,2–bis(4-pyridyl)ethane:2–nitrobenzene–1,3,5–triol (BPE: NBT) was synthesized by slow evaporation method using methanol at room temperature. The structure of adduct crystal was justified by single crystal X – ray diffraction analysis. It shows that the crystal is associated with P1 space group of triclinic system. FT – IR spectrum has been studied for BPE: NBT adduct crystal to identify the functional groups present in it.

Nitride Semiconductor Nanowire-based Solar-blind UV Photodetectors

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Abstract

The electronics sensors based on nanomaterials that can operate independently, and sustainably under self-bias are an indispensable component in today's energy-related technology. For example, photodetectors (PDs) are optoelectronic sensors, displaying a prospect in many applications such as space communications, Ozone leak detection, smoke detection, electronic industries, biomedicine and environmental protection, spectral science etc. The photodetectors have been conceptualized from the photoelectric effect whereas the photons as packets of electromagnetic radiation can be converted into electrical signals.

Recently, extensive progress has been achieved in group III-Nitrides semiconductors such as GaN, AlGaIn, AlN, AlGaIn/GaN, for developing the UV PDs. On the other hand, III-nitrides (Al, Ga, In) N are direct bandgap semiconductors with tunable bandgap from 6.2 to 0.6 eV and their alloys can be used to fabricate broad-band photodetectors, which covers UV, visible, and IR regions of the light spectrum. Here, we studied the performance of p-GaN nanowires for the photodetection of 325 nm UV light. Quasi-aligned p-GaN nanowires (NWs) were grown on n-Si (1 1 1) substrate by halide chemical vapour deposition (HCVD) using MgCl₂ precursor and followed by low-energy electron beam irradiation to activate the Mg acceptor doping in GaN NWs. The hybrid p-n heterojunction photodetector demonstrated a high responsivity of 134 - 255 mA W⁻¹ and detectivity of 3.73 - 1.7 × 10¹³ Jones at various applied potentials under 325 nm UV laser excitation source with an irradiated power intensity of 25 mW cm⁻². The fabrication of p-GaN NWs by Vapour Liquid Solid (VLS) approach, the PD device process, and the characterization results will be presented in detail.

Organometallic Gels of Organotin Dithiocarbamates

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Abstract:

In recent times, large interest have been made in to the study of low molecular weight organogels and metallogels, due to their diverse applications in drug delivery, sensors, templates for synthesis of nanostructures, biomimetics, etc.¹ Although many gelators are polymers, there has also been a great deal of interest in recent years in discovering small molecules that can form gels in organic and aqueous solutions. Recently, organooxotin based metallogels (organometallic gels) were reported in this context.² Herein, we report the synthesis of various organotin dithiocarbamate complexes, [*n*-BuSn(OH)₂S₂C-R] where R = NC₄H₈ (**1**); NC₅H₁₀ (**2**); NC₄H₈O (**3**) and [*n*-BuSn(S₂C-R)₃] where R = NC₄H₈ (**4**); NC₅H₁₀ (**5**); NC₄H₈O (**6**).³ All the complexes show a very interesting gel formation at varied concentration levels as well as varied solvent mediums (Figure 1). Surface morphology of the formed gels were characterized by various spectroscopic methods and

scanning electron microscopy (SEM) **References:**

1. A. Ajayaghosh, V. K. Praveev and C. Vijayakumar, *Chem. Soc. Rev.*, **2008**, 37, 109.
2. V. Chandrasekhar, K. Gopal, P. Singh, R. S. Narayanan and A. Duthie, *Organometallics*, **2009**, 28, 4593.
3. K. Ramasamy, V. L. Kuznetsov, K. Gopal, M. A. Malik, J. Raftery, P. P. Edwards and P.O'Brien, *Chem. Matter.*, **2013**, 25, 266.

Synthesis and characterization of activated graphene for Electrical double-layer capacitors: Effects of activating agents and electrolytes

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Abstract

Energy production and storage are both critical research domains where increasing demands for the improved performance of energy devices and the requirement for greener energy resources constitute immense research interest. Graphene has incurred intense interest since its freestanding form was isolated in 2004, and with the vast array of unique and highly desirable electrochemical properties it offers, comes the most promising prospects when implementation within areas of energy research is sought. Therefore, much effort has been made to synthesize and tailor the microstructures of porous carbon materials via various activation procedures (physical and chemical activation). In particular, the chemical activation of various carbon sources using different activating reagents such as KOH, ZnCl₂ and Phosphoric acid to achieve micropore size distribution and ultrahigh specific surface area of the resulting porous graphene. In this work we try to possess the characteristics and performance of activated graphene with different activating agents as well as their mechanism and their relationship with different electrolytes.

Keywords: Activated Graphene, Organic electrolyte, aqueous electrolyte, Double layer capacitance.

References

- 1) Conway, B. E. Plenum Publishers: New York, 1999
- 2) H. Marsh and F. R. Reinoso, Activated Carbon, Elsevier, Amsterdam, 2006
- 3) Raymundo-Pinero E, Azais P, Cacciaguerra T, Cazorla-Amoros D, Linares-Solano A, Beguin F (2005) Carbon 43:786–795

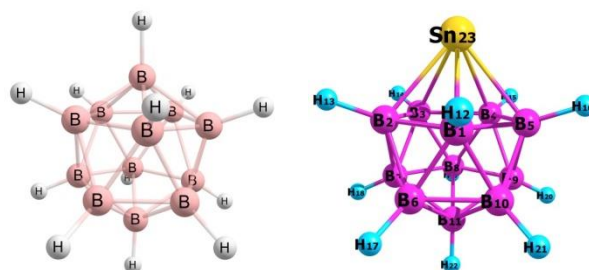
Structural Features and Applications of Icosahedral Stanna-closo-dodecaborate dianion and its Oligomers – A Computational Exploration

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Abstract.

A twelve vertex icosahedral boranes are highly symmetric three dimensional aromatic cluster. These dodecaborane clusters $[B_{12}H_{12}]^{2-}$ can form different types of heteroborane variants. The heterometallic stanna-closo-dodecaborates $[SnB_{12}H_{12}]^{2-}$ are the unique variety of 12 vertex closo-dodecaborane. The monomer unit of dianionic stanna-closo-dodecaborate can form different type of oligomers such as dimmers, tetramer and hexamer. The 3D aromaticity of stanna-closo-dodecaborates can cause many optoelectronic properties [1]. The vibrational spectral study proves that the cluster breathing arrives at around 250 cm^{-1} which causes the 3D aromaticity to the cluster with respect to the tin vertex [2]. The effect of 3D aromaticity has been raised by the improvement of oligomer members. These monomer and oligomers can cause many applications in molecular electronics, batteries, optoelectronic materials, radio nuclide extraction, hydrogen storage devices and biological applications such as BNCT, anti-HIV, malignant tumours, glioma and etc., [3, 4] These oligomers have been explored by density functional theory(DFT) method at BP86/Def2-TZVP level [5].



References:

1. I. E. Golub, O. A. Filippov, V. A. Kulikova, N. V. Belkova, L. M. Epstein, E. S. Shubina, J. Molecules, 2020, 25, 2920.
 2. T. Gadt, L. Wesemann, Z. Anorg. Allg. Chem, 2007, 633, 693-699.
 3. M. Kozisek, P. Cigler, M. Lepsik, J. Fanfrlik, P. Rezacova, J. Brynda, J. Pokorna, J. Plesek, B. Gruner, K. G. Saskova, J. Vaclavikova, V. Kral, J. Konvalinka, J. Med. Chem, 2008, 51, 4839-4843.
 4. R. Nunez, M. Tarres, A. F. Ugalde, F. F. Debiani, F. Teixidor, Chemical. Rev, 2016, 116, 23, 14307-14378.
- V. Nagalakshmi, R. Nandhini, V. Brindha, B.S. Krishnamoorthy, K. Balasubramani, J. Organomet. Chem., 2020, 912, 121175.

Electrical conductivity of diene and phene molecular nanowires: A QTAIM approach

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Abstract

The impact of electric field (EF) in a proposed nanowires diene and phene has been examined hypothetically from the basic and electronic charge transport properties utilizing the first principles of quantum calculations and QTAIM theory. The applied EF ($0-0.26\text{V}\text{\AA}^{-1}$) modifies the molecular confirmation, electron density, electrostatic properties and the orbital levels of the molecule. Moreover, the applied EF alters the homo-lumo gap, which reveals the nature of the electrical conductivity. The electrostatic potential for different degrees of applied EF uncovers the charge concentration of the molecule. The I-V qualities of the molecule have been considered against different applied fields utilizing Landauer formalism.

KEYWORDS: Nanoelectronics; Quantum Calculations; QTAIM theory; I-V characteristics

Structural Preferences and the Chemistry of *Closo*-borane Derivatives**– Bridging the Experiment with Theory****B. S. Krishnamoorthy***Department of Chemistry SF, PSG College of Arts and Science, Coimbatore, India.641014.*Corresponding Author: bskimo@gmail.com**Abstract**

Boranes and metallaboranes are compounds with B-H bonding and M-B-H bonding respectively in the new class of inorganometallic chemistry. These boranes and metallaboranes having promising applications in the field of Material chemistry as hydrogen storage devices, optical materials, etc.; in Biological chemistry as anti-cancer agent in boron neutron capture therapy (BNCT), HIV inhibition, etc; in catalysis as C-H activation in many reactions.¹ The electron deficient nature of boron makes it very useful in synthesizing variety of compounds with different structural feature which are the main reason for their potential applications. But the complete characterization of these structures is always challenging and need help from the theoretical computational studies. Here we have used the density functional theory (DFT) method (BP86/Def2-TZVP) to address structural preferences, reactivity, spectroscopic and thermochemical properties and molecular orbital analysis of the neutral, anionic, dianionic *closo*-boranes and *closo*-metallaboranes (B_nH_n) and (MB_{n-1}H_n). Density Functional Theory (DFT) calculations are promising tools for the complete structural characterization of the synthesized molecules as well as to bring out the real chemistry involved in the complicated reactions and also to modeling new molecules.^{2,3} The optimized geometrical structures and the DFT computed ¹¹B, ¹H and ¹³C spectroscopic parameters are compared with the experimental values of related compounds. The results predict that computational chemistry tools are highly useful in understanding the chemistry behind the *closo*-boranes and *closo*-metallaboranes. The important results obtained will be presented.

Key words: *Closo*-boranes; metallaboranes; DFT; NMR;**References:**

1. Bharathi, K., Beerma, L., Santhi, C., Krishnamoorthy, B. S. and Halet, J-F., J. Organomet. Chem., **2005**, 792, 220-228.
2. B. S. Krishnamoorthy, A. Thakur, K. K. V. Chakrahari, S. K. Bose, P. Hamon, T. Roisnel, S. Kahlal, S. Ghosh, J-F. Halet, *Inorg. Chem.*, **2012**, 51, 10375.
3. V. Nagalakshmi, R. Nandhini, V. Brindha, B.S. Krishnamoorthy, K. Balasubramani, [*J. Organomet. Chem.*, **2020**, 912, 121175.](#)

A Technological Review on Bifacial Solar Trackers for improving Solar Power Generation

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Abstract

Bifacial solar cell and their tracking system is a promising, well-developed technology that enhances solar power generation by utilizing light absorption from the albedo. This review highlights the most advanced bifacial solar PV technology available today based on broad investigation of various literature survey and focused on revealing new prospects for research and development to improve and evaluate performance and increase the overall significance of bifacial technology in a world that is rapidly developing solar industry.

Keywords: monofacial, bifacial, photovoltaic, solar tracker, Albedo

Impact of prelithiation in stannic oxide anodes for Li ion batteries

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Abstract

Stannic oxide (SnO₂) is a non-Li still an efficient anode material for Li ion battery applications. Prelithiation of anodes is a strategy to further enhance the theoretical capacity and discharge capacity of the anodes and same has been attempted in SnO₂- intercalating anodes.

Inclusion of 0.25 % of Li in SnO₂ matrix is done by one step co-precipitation method and compared with pristine SnO₂. Basic physicochemical aspects such as XRD, FTIR, and crystallite size are similar to each other while morphological orientation is altered on Li inclusion in SnO₂ matrix. The crystallite sizes are in the range of 40 nm and 32 nm for pristine and doped samples respectively. Electrochemical aspects show a great improvement in the Li included samples when tested in aqueous electrochemical system. The discharge capacity is ~195 mAhg⁻¹ for Li-SnO₂ and ~150 mAhg⁻¹ for pristine SnO₂ samples for 500 cycles while stability is unchanged for both the samples. The electrical conductivity is ~2*10⁻⁴ Scm⁻¹ for pristine and 2.3*10⁻⁴ Scm⁻¹ in room temperature.

Keywords: intercalation anodes; stannic oxide; Li ion battery; capacity; impedance.

Find, Bind, Glow and Cut: Fluorescence Guided Surgeries of Cancers

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Abstract

Surgery is an important treatment option for cancer because it gives them the best chance of survival. However, sometimes the microscopic pieces of the cancers are not visible to the naked eye. In neurosurgery, it is of utmost importance to achieve maximal safe resection while minimizing iatrogenic neurologic deficit. Recently, the *fluorescence-guided surgery* has emerged as a cost-effective method to accurately visualize neoplastic areas in real-time to guide resection. Once our molecule reaches their target they are endocytosed and remain inside the cancer cells throughout the length of the procedure. The detailed developmental process and clinical translation will be discussed.

An Insight On Revival Of Deccan Wool For Industrial And Decentralized Use

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Abstract

Wool used in textiles can be traced back to the Sumerian civilization. Wool fibre is one the versatile natural fibres which has been used by mankind. Though the properties of different varieties of wool differ in certain attributes, the foremost characteristics remain the same. Wool properties differ from various breeds of sheep owing to the climatic and geographical conditions. In India sheep breeding is carried out as a traditional occupation by many tribes. Most of the Indian wool varieties from Deccan region are coarser compared to wool from North India. These coarser wool varieties have been used in blankets traditionally. The acrylic fibres were softer and fine compared to native Indian sheep breeds. But with the introduction of acrylic fibres which are cost effective and with high thermal insulation, the traditional wool blankets face a decline in practice. The sheep rearing shepherds live hood depending on wool manufacture took a downhill as the demand for wool reduced. Innovative usage of native coarser wool varieties for various industrial uses can revive the Deccan wool. This paper explores the various possibilities of utilizing Deccan wool in different fields.

Design And Development Of Nursing Inners For Feeding Mothers Using Clo Software For Virtual Reality Mode.

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² CLO SOFTWARE FOR VIRTUAL REALITY MODE.

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Abstract

Breastfeeding is one of the most cost-effective interventions to improve health of the baby and prevent illness. One of the major anxieties women have in relation to breastfeeding is that they fear lactation will change the shape of their breasts due to the milk supply. The study was conducted to identify the problems faced by the breast-feeding mothers for the feeding inner and to develop the prototype sample for their comfort, fit, ease and acceptability by the feeding mothers. The Survey was conducted through the direct interview method among

feeding mothers, to data needed for analysis and development of the sample. The target population for the survey was 100 breastfeeding mothers in and around Coimbatore city. The pattern making can lead to a better understanding of the body to garment interaction, and the fit of apparel by the 2D and 3D. The design are developed by the CLO Software for the virtual fit analysis for the design and pattern development for the proto sample. The purpose of this paper is to show that a new Virtual system would better serve the feeding mothers for selecting the correct size and product for their use. This system would also be more efficient as it would reduce the consumer time spent in fit identification of bust cup sizing, material preference and design selection for their comfort.

**Synthesis and Characterization Of SPEEK Blend Membranes For Fuel Cell
Applications**

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India*

Abstract

Fuel Cells are excellent electrochemical devices that directly converts the chemical energy of fuel to electric energy without the intermediate mechanical energy. In the current study, we have synthesized a series of polymer electrolyte membranes with Sulphonated Polyether ether ketone as the backbone. The synthesized membranes were tested for ion exchange capacity, solvent absorption, durability to check their suitability. Instrumental characterization includes FTIR, TGA, XRD, Impedance Spectroscopy. The novel membranes were found to be suitable for application as electrolyte membranes in fuel cell.

One-step molten flux synthesis and thermoelectric properties of $\text{Ca}_{3-x}\text{Y}_x\text{Co}_4\text{O}_9$

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Abstract:

An efficient p-type thermoelectric oxide material calcium cobaltite ($\text{Ca}_3\text{Co}_4\text{O}_9$). Here, we present an approach to optimize the thermoelectric performance of $\text{Ca}_3\text{Co}_4\text{O}_9$ by controlling the chemical composition and preparation process. $\text{Ca}_{3-x}\text{Y}_x\text{Co}_4\text{O}_9$ ($x=0.0-1.0$) is made in one step using the molten salt process. Yttrium substitution on the calcium site increases the electrical resistivity due to a reduction in the concentration. Resistivity plots show semiconducting behavior for all the compositions, particularly in the low-temperature regime. The grain size of the parent and substituted products are in the range of 1-2 μm . The particle morphologies investigated by SEM indicate irregular platelet-shaped microstructures. The Seebeck coefficient and figure of merit of $\text{Ca}_2\text{YCo}_4\text{O}_9$ at 1000K are 180 μVK^{-1} and 0.23 respectively. The ability to achieve high thermoelectric characteristics is made possible by the regulated crystallographic and morphologic orientation.

**Selective production of 5-hydroxymethylfurfural from renewable biomass derived
glucose using heterogeneous catalysis**

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Abstract

Glucose remains as the only precursor for the production of high value feed-stock chemicals like hydroxymethylfurfural (HMF), levulinic acid and lactic acid etc. Cellulose can be converted to glucose in ionic liquids, however the industrial-scale production of glucose from cellulose is still limited due to difficulties encountered during separation from ionic liquids, low yield and multiple side reactions. Recently Schuth et al. developed an integrated catalytic approach, a combined chemical and enzymatic catalysis, for the production sugars from cellulose and the process requires further research optimisation. Production of chemicals from biomass was not achieved due to multiple by-products and lack of selective catalyst. Herein this abstract claims the utilisation of different phosphate supported catalyst for this reaction. Water-tetrahydrofuran (THF) is well known system which used for the synthesis of HMF due to high solubility of HMF in THF. Further HMF can be easily separated from water

– THF mixture by making the system biphasic by the addition of salt and HMF can be easily converted to other chemicals and fuels.

Keywords: Renewable Chemicals, Biomass, Glucose, 5-Hydroxymethylfurfural, Heterogeneous Catalysis.

**Computational investigation on the structural and molecular properties of
Phenazine and its derivatives**

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Abstract

The increase in energy needs for global consumption demands the need to identify various sources of energy for sustainable environment [1]. In this context, Microbial fuel cells (MFCs) are evolving class of fuel cells that are researched recently since they produce energy as well as are environmentally friendly [2]. However, a highly efficient MFC demands the choice of improved electrodes and electrolyte materials for their better performance. Consecutively, this work deals with the study of Phenazine, an anolyte used in MFCs and its derivatives such as methyl, hydroxyl, aldehyde, carboxyl and sulpho groups using density functional theory. The structures are optimized using the B3LYP [3] hybrid functional, with 6-31g(d,p) basis set for all atoms. The structural properties such as bond length and bond angle, molecular properties such as HOMO-LUMO gap and reactivity parameters such as electronegativity, chemical potential, chemical softness, and electrophilicity index and thermochemical parameters are investigated to understand the stability and reactivity of Phenazines and their derivatives. This study will help us to identify the most stable and reactive derivative of Phenazine which may aid in developing better anolytes for MFCs.

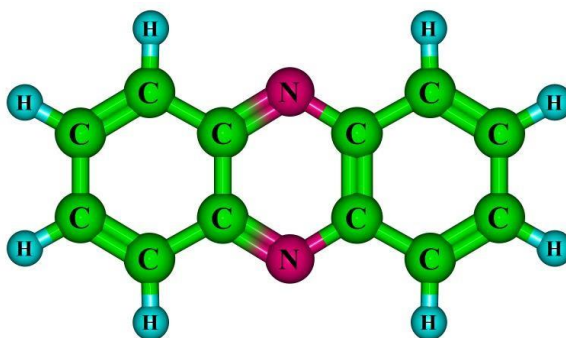


Figure 1: Phenazine molecule

References

- [1] Chu, S., Cui, Y. & Liu, N. The path towards sustainable energy. *Nature Mater* 16, 16–22 (2017).
- [2] Bruce E. Logan, Bert Hamelers, René Rozendal, Uwe Schröder, Jürg Keller, Stefano Freguia, Peter Aelterman, Willy Verstraete, and Korneel Rabaey *Environmental Science & Technology* **2006** 40 (17), 5181-5192
- [3] A.D. Becke, Density-functional thermochemistry. III. The role of exact exchange, *The Journal of Chemical Physics*, 98 (1993) 5648-5652.
- [4] G. A. Petersson and M. A. Al-Laham, “A complete basis set model chemistry. II. Open-shell systems and the total energies of the first-row atoms,” *J. Chem. Phys.*, 94 (1991) 6081-90. DOI: 10.1063/1.460447

Room Temperature Deposition of PbS Thin Films by CBD Technique for IR Detector Applications

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Abstract

Infrared (IR) detectors has gained more significance in the area of communication,

security and monitoring. Materials used for IR detectors include PbS, PbSe, Ge, InAs etc., PbS is sensitive to radiation for the wavelengths from 1 to 2.5 μm at room temperature and found more efficient for electroluminescent devices such as IR detectors which could be devised and tuned accordingly. In addition, PbS thin films have more direct band-gap and efficiency. In the present work, Lead Sulfide (PbS) thin films have been prepared by Chemical Bath Deposition (CBD) technique with variation in deposition time at room temperature of range 28 $^{\circ}\text{C}$ – 32 $^{\circ}\text{C}$ with a pH range of 10 – 11. The XRD analysis confirms the presence of Lead sulfide compound in the thin films. Highly crystalline layers with cubic crystal structure were confirmed from XRD analysis. The energy gap values were estimated in the range between ~1.7 to 2.3 eV. There is a stable absorption in the Infrared range which could be useful for application purposes. The AFM images show the smooth and even deposition of the films. The average roughness from the AFM is optimum and thus it also confirms the smoothness of the sample. The experimental laboratory setup of IR detection analyser shows that the prepared films absorb a very good amount of light and as the bath deposition time increases, the absorption also increases, which proves that PbS is a very good IR detector candidate.

Deposition and Characterization of CdS/ZnO Composite Thin Films for Solar Cell Applications

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Abstract

The CdS thin films were prepared by Chemical Bath Deposition technique onto ZnO/FTO substrate. The preparation of polycrystalline CdS thin films by chemical bath deposition resulted in good deposition rate. ZnO nano-thin film was prepared by using RF magnetron sputtering over FTO substrate. The AFM results confirm that the deposited CdS and ZnO films were uniform without cracks or holes and with dense surface area. FE-SEM

image clearly shows a perfect spherical grain with uniform grain boundaries in the film. It can be easily understood that, the shape and arrangement of the grains are highly influenced by the growth mechanism. Since, CdS has relatively wide band gap energy and possesses characteristics of n-type semiconductor; it is shown that the applied chemical bath deposition method allows very thin covering films with the order of few nanometers. The information regarding optical and solid-state properties of each layer were studied by UV-VIS-NIR and FT IR analysis. The absorption spectrum reveals a sharp peak at 302nm is due to the $t_2 \rightarrow \pi^*$ transition of the metal (Cd) compound. In the case transmittance spectrum, it can be clearly seen that, the deposited CdS thin film has the wide band of transmittance spectrum from 300-1500nm. In FT-IR analysis, the weak absorption band at 3832.28cm^{-1} is assigned to O-H stretching vibration of the adsorbed water in the sample. The absorption band observed at $449.69 - 778.725\text{cm}^{-1}$ are due to CdS stretching. Any band due to ZnO is not observable in the IR spectra as the compound is IR – inactive. This confirms that the nano – sized CdS film prepared is suitable for the solar energy applications.

Electrochemical Oxidation of Benzylic Hydrogen- A facile method to synthesize hydroxy compounds

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Abstract

To build varieties of oxyfunctionalized organic compounds synthetic chemists rely on the oxidation of alkanes¹⁻³. In general, it is achieved by strong oxidants such as SeO_2 , KMnO_4 , MnO_2 , N-bromo succinimide (NBS), etc⁴. Use of strong oxidizing agents leads to poor product selectivity and over oxidation. Moreover, these processes are expensive and required high temperature⁵. Use of electrochemical methods provides new avenues for synthesizing organic compounds. Electrochemical synthesis consumes less energy and the elimination of toxic reagents and ensure a greener pathway in synthetic organic chemistry. In the present investigation, we succeed to oxidize electrochemically three compounds (Methyl benzene,

Tetralin, Diphenylmethane) which consists of benzylic hydrogen. 1:1 methanol-water solvent along with sodium ascorbate as the supporting electrolyte, was used as the electrolytic medium. A constant voltage of 20 V was applied for electrooxidation using platinum electrodes. Ascorbate played dual role as supporting electrolyte as well as electron transferring mediator. Electrochemical process didn't take place in the absence of ascorbate ion. The yields of the compounds were appreciable which was verified by column chromatography (Fig.1). To understand the mechanism of electrochemical processes, Cyclic voltametric studies were conducted using glassy carbon as working electrode, Pt as counter electrode and Ag/AgCl as reference electrodes.

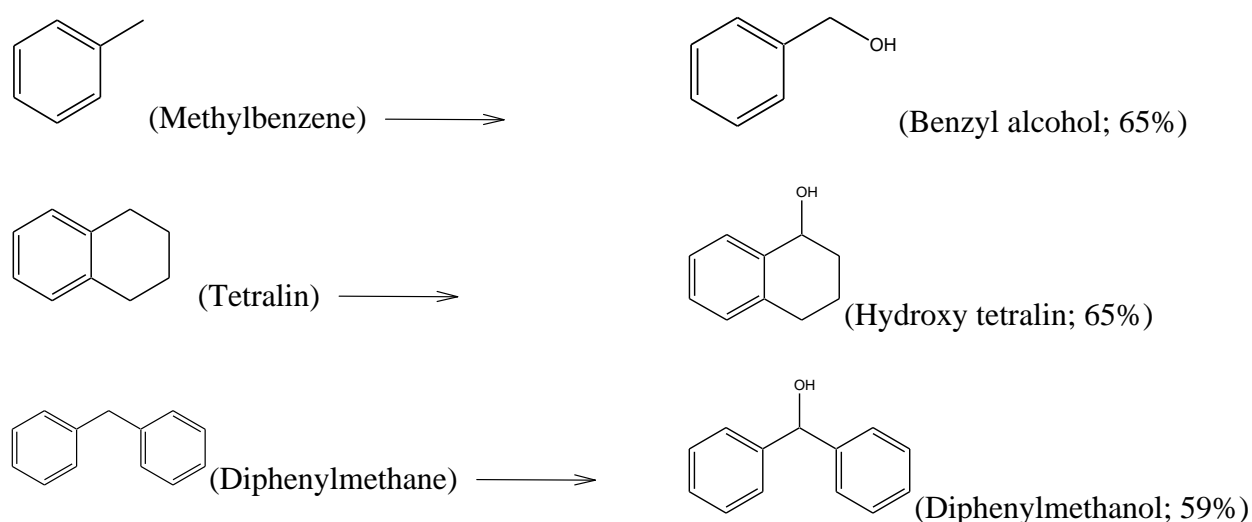


Fig. 1 Electrochemical oxidation of benzylic hydrogens in the compounds

In general, reaction mixture of a compound displayed two oxidation peaks in the voltammogram at around 1.2 V and 1.7 V due to the two-stage oxidation process in the presence of ascorbate (Fig. 2). The anodic oxidation processes results in a stable carbocation at the benzylic position which further interacts with a water molecule to form hydroxy compounds.

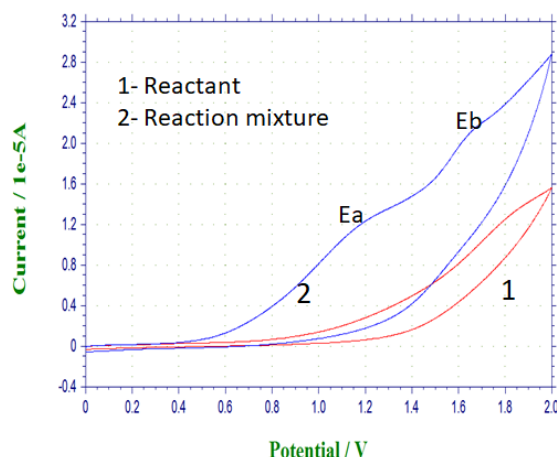


Fig. 2 Cyclic voltammograms of benzylic compound and reaction mixture

References

1. Hilt, G. *Chem. Electrochem.*, **2019**, 7(2), 395-405.
2. D. Simonsson, *J. Appl. Electrochem.*, **1984**, 14, 595–604
3. Cecchini, R., Pelosi, G. *IEEE Antennas and Propa. Magazine*, **1992**, 34(2), 30–37.
4. Lund, H. *J. Electrochem. Soc.*, **2002**, 149, S21–S33
5. Francke, R., Little, R. D. *Chem. Soc. Rev.*, **2014**, 43, 2492–2521

Enhancement of Power conversion efficiency by Sm co-doping at Ag site of Ag-TiO₂ NPs

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Abstract:

TiO₂ is a promising candidate for planar perovskite solar cells due to its high transparency, excellent carrier separation ability, environmental stability, and easy fabricating process. Metal ions, ex. Ag, could be conveniently substituted into the TiO₂ lattice if their ionic radii are comparable to that of the Ti⁴⁺ cations, so that it could improve power conversion efficiency through the defect states. Inserting different metal ions further into TiO₂ lattice by replacing Ag ions should affect the photo-absorption behaviour [1].

Here, high quality of pure and Sm doped Ag-TiO₂ NPs with the various percentage of Samarium (Sm-0.1,0.2,0.3%) were prepared by the hydrothermal method, and characterized

by various techniques. By adding Sm NPs in Ag-TiO₂ NPs, XRD profile does not change 2θ position, but its FWHM is getting increased moderately compared to Ag-TiO₂. i.e., the doping of Sm influences the Pure TiO₂ and Ag-TiO₂ in terms of crystalline size and lattice strain, but not with lattice parameters, due to the segregation of the dopant cations at the grain boundary. Sm dopant has a depression effect on the anatase particle growth and disperses homogeneously on the surface of TiO₂ NPs. All the samples consist of indirect energy gaps. Compared with the band gap energy of pristine Ag-TiO₂ [E_g = 3.24 eV], the Ag-Sm-TiO₂ samples show a smaller band gap energy [2]. This might be due to defect level in the band gap created by Sm dopant which can act as traps for trapping electrons. PL spectra of Sm doped samples are almost no effect below 550 nm, but is much stronger than PL of Ag-TiO₂ NPs, indicating that these samples are potentially better candidate materials for optoelectronic device applications [3].

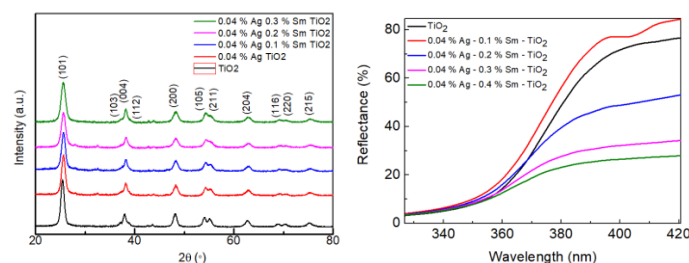


Figure 1: (a) XRD patterns; (b) UV-DRS reflectance plots of synthesised pure and Sm doped Ag-TiO₂ with the various percentage of Samarium (Sm-0.1,0.2,0.3%)NPs

[1] Hoffmann et al., Chem. Rev. 95 (1995) 69

[2] Hao Peng et al., J. Rare Earths, 38 (2020) 1297

[3] M. Murayama et al., Phys. Status Solidi B256 (2019) 1800522

Electrodeposition of Ni/NiO-Co₃O₄-MnCo₂O₄ nanocomposite coatings and their anti-corrosion properties

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Abstract

Nickel (Ni) is broadly utilized for foremost engineering application. But nickel exhibits lower mechanical properties such as hardness and wear resistance than Ni-based composite materials. So, in this work, we significantly improve the mechanical properties of Ni by incorporating micro-cubes like NiO-Co₃O₄-MnCo₂O₄ (NCM) particles. Ni/NCM composite coatings have been successfully prepared on mild steel specimens by means of

electrodeposition technique. The crystal orientation, composition, morphology, three dimensional view of surface, and strength of the prepared coatings are characterized by employing X-ray diffraction (XRD), energy dispersive spectroscopy (EDS), scanning electron microscopy (SEM), atomic force microscopy (AFM), and Vicker's hardness tester, respectively. Electrochemical measurements such as Tafel and impedance experiments were executed to analyze the corrosion resistance properties of fabricated Ni/NCM composite deposits. The prepared Ni/NCM will may be promising candidate for corrosion resistance of mild steel surface.

Keywords: Corrosion; Matrix; Polarization; Impedance; Composite

References

- [1] S. Kumaraguru, G.G. Kumar, S. Shanmugan, et al., J. Alloys Cmpds. 753 (2018) 740–747.
 - [2] S. Kumaraguru, G.G. Kumar, S. Raghu, et al., Appl. Surf. Sci. 447 (2018) 463–470.
 - [3] S. Kumaraguru, S. Mohan, Surf. Coat. Technol. 349 (2018) 567–575.
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Magnetic effect of TiO₂ nanoparticles incorporated with Azadirachta indica

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Abstract:

TiO₂, a promising nanoapplicant is synthesized using solgel method and characterized using XRD, FTIR, XPS, UV-VIS, HRSEM, EDX and VSM. Synthesized pure TiO₂ nanoparticles had particle size range of 30-60 nm with 3.13 eV direct optical band gap. The chemical compositions of TiO₂ powder sample were verified using XPS and EDX analysis. Neem (Azadirachta indica) nanoparticles obtained by green synthesis method was doped with

TiO₂ nanoparticles and characterized to evaluate its amplified ferromagnetic property using VSM method. The result shows neem enhances magnetic property on TiO₂ nanoparticles.

Key Words: Azardirachta indica, TiO₂ nanoparticle, Ferromagnetism

Characterization of LLZO Garnet for battery

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Abstract

Improvement of the technology predominantly depends on the solid electrolyte material employed in the battery technology. A proposed solid electrolyte for extremely safe Li-ion batteries is cubic garnet-type Li₇La₃Zr₂O₁₂ (LLZO), to improve the battery purpose like flexibility, cycle durability (battery life), recharge time, power density, safety, and other characteristics as well as research methods and applications. In this work, we used a conventional solid-state reaction technique to synthesis the LLZO. The X-ray diffraction (XRD) patterns proved that LLZO cubic garnet was present. UV-vis spectroscopy was used to analyze the optical band gap of the electrolyte and Fourier transform infrared spectroscopy (FTIR) has taken. In this study, Synthesis and Characterization techniques of LLZO discussed.

A Perovskite solid electrolyte for Al-doped Li-ion battery

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Abstract:

Perovskite structure solid electrolyte prepared for high energy storage in Lithium-ion battery. In this work $\text{Li}_{0.25}\text{La}_{0.75}\text{Al}_{0.5-4x}\text{Ti}_{0.5+3x}\text{O}_3$ (LLATO) ($x=0,0.02,0.04,0.06,0.08,0.1$) with different dopants synthesized by sol-gel method. The characterization techniques such as XRD, AC impedance spectrometer, SEM, VSM were used for this analysis. The X-ray diffraction analysis revealed that the structure from monoclinic to tetragonal with increasing Al with Ti content. The highest electrical conductivity of $\text{Li}_{0.25}\text{La}_{0.75}\text{Al}_{0.5-4x}\text{Ti}_{0.5+3x}\text{O}_3$ (LLATO) sample was achieved at 1200° C for 12h .

Keywords: Al, Li, LLATO, VSM

Preparation and Characterization of manganese sulphide (MnS) nanoparticles

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Abstract

The manganese sulphide (MnS) nanoparticles have been synthesized by hydrothermal process. The structural parameters of the prepared materials were confirmed by using the Powder X-Ray of Diffraction method. All peaks were matched with JCPDS Card No # 89-4952, which confirms the cubic structure of prepared sample. The high resolution scanning electron microscope (HR-SEM) was used to record the surface morphology of MnS. Using the tauc plot the band gap was determined from the UV-Visible (UV-Vis) absorption spectra recorded in the wavelength range of 200-1200 nm. The functional group analyses were carried out by the FTIR spectrum. From the impedance spectrum the dielectric loss, dielectric constant, AC conductivity, and DC conductivity were measured at room temperature, 50 °, 100 °, and 150 °C at a frequency of 100 Hz (1 Hz-1 MHz).

Keywords

Powders: Chemical preparation, Dielectric properties, Metal chalcogenides.

Effect Of Thermal Comfort Properties Through Plasma Treatment On Knitted Fabrics

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Abstract

The study focused on the effect of plasma treatment on the thermal comfort properties of cotton and polyester fibers blended in the ratios of 0:100, 50:50 and 100:0 in four types of fabric structures like single jersey, cross tuck, cross miss and twill at two different loop lengths of 0.29 cm and 0.32 cm. The results showed that the knitted fabrics made from 100% polyester shows better thermal resistance characteristics. Whereas, the fabric made with the 100% cotton gives the better air permeability and water vapor permeability behavior. The fabric knitted made from 100% polyester with a cross-miss structure on a loop length of 0.32 shows an excellent thermal comfort characteristic compared to all the other samples due to its appreciable behaviors suitable for thermal conduction. The plasma treatment has a great impact on the thermal properties in such a way that it reduces the air permeability and water vapor permeability and increases the thermal resistance.

Key words: Comfort, Cotton, Knitted fabrics, Knitted Structures, Plasma treatment, Polyester, Thermal comfort.

Development Of Tri-Layered Knitted Fabric For Active Sports Wear Application

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Abstract

For any sportswear application in fabrics, the key property is moisture management property. Comfort differs from person to person and this property boosts up the comfort level of the fabrics. Comfort is the relation between a psychological and physiological behavior of the wearer and it varies depending upon the perception of the wearer. Thermo physiological comfort is mainly characterized by the moisture transmission of the fabric. This article deals with analysis of the moisture management properties of the tri-layer knitted fabrics, made of a variety of yarns in the inner and outer sides combination of micro denier filament polyester, Monofilament, wool, bamboo and cotton. The results indicated that, B/MDPF/C, the sample with the inner layer bamboo, middle layer of Micro denier Filament polyester and outer layer of cotton fabrics shows appreciable moisture management property, providing an excellent comfort nature due to its appreciable property required for a moisture management fabric.

Keywords: Sportswear, Bamboo, Knitted fabrics, , Micro denier polyester, Moisture management.

Effect of solvent pH Modification in Synthesis of Titanium Dioxide Nanoparticle for Photocatalytic Wastewater Treatment and Treated Water in Usage of Plant Growth

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Abstract:

The physical and chemical parameters of aquatic habitat are changing abnormally due to organic pollutants creating a significant warning to water reservoir. A popular solution for this water pollution photocatalysis by semiconductor metal oxides because of its effectiveness and adaptability. In this work, the impact of varying the solvents pH on the structural, morphological, optical and photocatalytic properties of Titanium di oxide nanoparticles are investigated. The photocatalytic test is carried out by varying various parameters like light exposure time, dye's initial concentration, pH and amount of catalyst in degrading malachite green. The highest rate of malachite green dye removal is obtained in 100 ppm of dye concentration with neutral pH and 0.05g of catalyst which is equal to 98.14% under visible light irradiation. The photocatalyst synthesized are also tested for its photo stability and reusability. As an application to society the photocatalytically treated water is tested for their effectiveness in growth of Arakeerai. Their growth is monitored and the result in growth of araikeerai with the previously treated water using pH modified TiO₂ has exhibited a good progress in growth.

Keywords: semiconductor metal oxide, microwave irradiation, photocatalysis, treated water, plant growth.

Investigation on structural, Photoluminescence and Magnetic properties of Mn-doped ZnO nanoparticles via solvothermal route.

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Abstract:

Mn-doped ZnO (Zn: Mn) nanoparticles were successfully synthesized using the solvothermal method with concentration (X = 0.04 to 0.07) annealing at 450⁰c. In structural, optical and magnetic properties were investigated by X-ray Diffractometer (XRD), Field Emission Scanning Electron Microscope (FESEM), Fourier Transform Infrared (FTIR), UV – Visible spectrophotometer (UV-Vis), Photoluminescence (PL), Electron Paramagnetic Resonance (EPR) and Vibrating Sample Magnetometer (VSM) respectively. XRD studies confirm the hexagonal wurtzite structure and good crystallinity in nature. From FESEM analysis, the confirmed image formation of the nanoparticles and the particle size of the sample were evaluated. UV – Vis studies showed the absorbance wavelength and energy bandgap values were obtained. PL and EPR measurements provide the evidence of the presence of zinc vacancy defects and g values were calculated. Interestingly, the magnetic measurement showed the ferromagnetic structure with large saturation magnetization values using VSM and it is widely used for spintronics applications.

Keywords: Mn doped ZnO, solvothermal method, structural property, optical property and magnetic property

Enhancing the efficiency of Dye-Sensitized Solar Cell using Terminalia catappa fruit based on Ni-doped ZnO as Photoanode

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Abstract

In this report, the transition metal Ni doped ZnO nanoparticles at various concentrations prepared by solvothermal irradiation method was used to fabricate ZnO-based dye-sensitized solar cells as photo sensitizers of Terminalia catappa fruit using ethanol as solvent. These prepared metal oxide semiconductor nanoparticles were studied by XRD, FE-SEM, FTIR, UV-Visible and EIS. Electrochemical parameters of open circuit voltage, short circuit current density, and fill factor were calculated using J-V characterization. The effect of Ni doping on the efficiency of ZnO-based DSSC is investigated, which results in enhanced DSSC light harvesting efficiency calculated. This obtained result confirms that the doping of ZnO nanoparticles is a valuable material for increasing the corresponding efficiency of a solar cell application.

Keywords: Ni-ZnO, Solvothermal, FTO, Doctor blade, Terminalia catappa, Efficiency.

Study of the functional behaviour of ZnFe₂O₄ decorated reduced graphene oxide nanocomposite

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Abstract

The zinc ferrite decorated reduced graphene oxide (ZnFe₂O₄-rGO) magnetic hybrids have received a great deal of attention because of their prospective uses in a variety of fields, including magnetic resonance imaging, photocatalytic activity, targeted drug delivery, and the

elimination of heavy metal ions, organic contaminants and so on. The zinc ferrite decorated reduced graphene oxide (ZnFe₂O₄-rGO) was synthesized by using solvothermal method. The prepared nanocomposite were characterized and examined for their structural, morphological, magnetic, optical, and electrical conductivity properties. Analyzing the structural and morphological characteristics of the prepared sample is greatly aided by the XRD and HRSEM. The VSM was used to investigate the magnetic properties of the nanocomposite. The UV-Vis and FTIR spectroscopy was utilized to examine the ZnFe₂O₄-rGO optical activity. The electrical behaviour of the nanocomposite was studied using Dielectric (LCZ) parameters.

Keywords: ZnFe₂O₄-rGO; Solvothermal method; Photocatalytic; HRSEM; VSM

Review On Nanotechnology In Defence And Radiation Protection

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Abstract

In this study, we discussed about emerging development of nanotechnology in the field of defence research and radiation protection by means of theoretical view. Nanotechnology is the science of extremely small structures, having size of less than 100nm. In which radiation protection is an application of nanoparticles to protect from radiation exposure. Free radicals are formed through ionizing reactions, such as the photoelectric, Compton and Auger effects. These free radicals react with DNA and RNA, causing molecular alterations, improper segregation of chromosomes during mitosis, and radiation-mitotic death. These harmful effects due to radiation can be fully or partially reduced by using protective gears made of nanoparticles. And also, nanotechnology played a major role in improvisation of defence equipment. It offers tremendous potential for reducing weight and increasing the performance of materials used in any army applications.

A Chemosensor For Selective Detection Of Hg²⁺ And CN⁻**G. Narmatha, Elizabeth Antony and R. Nandhakumar***

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Abstract

The recognition and sensing of the biologically and environmentally important metal ions has emerged as a significant role in the field of chemical sensors in recent years. Among the various analytical methods, fluorescence has a powerful tool due to its simplicity and high detection limit. Among the various cations, Mercury shows high toxicity that affect environment and human health deeply. And a variety of diseases are closely associated with the adverse effects of Hg²⁺ ions. In addition, Cyanide is well-known hazardous chemical and widely used in many chemical industries, such as electroplating, leather and metallurgy. Utilization of CN⁻ can cause many adverse effects on human body such as vision, endocrine, heart and central nervous system and even threaten life. Out of various methods available for the detection of Hg²⁺ and CN⁻ ions the spectrofluorometry is extensively used due to its high sensitivity. Due to this, detection of Hg²⁺ and CN⁻ metal ions has attained a high significance in fluorescence chemosensing. Thiourea based ligands are organosulfur compounds having excellent biological and non-biological applications. These compounds contain S- and N-, which are nucleophilic and allow for establishing inter and intra-molecular hydrogen bonding. These characteristics make thiourea moiety a very important chemosensor to detect various environmental pollutants. In this work, a simple fluorescence sensor based on 8-Aminoquinoline and Phenyl isothiocyanate (AQS) was designed and characterized by ¹H NMR and ¹³C NMR and Mass spectrum. It was investigated by UV-Vis and fluorescence spectroscopy (DMSO-H₂O, 1:1v/v, pH=7.4) buffer solution. The result of the Job's plot indicating that the binding stoichiometric ratio are 1:1 for Hg²⁺ and CN⁻. The limit of detection (LOD) value is found to be 0.024×10⁻²M. The application studies are underway in our laboratory.

A Fluorescent Chemosensor Based On Naphthyl Scaffold For The Detection Of Cu²⁺ Metal Ion

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Abstract

The design of chemosensors for the detection of different metal cations has showed major interest in present days due to their important advantages in environmental and biological areas. Among all metal cations, copper has significant attention because of its paramagnetic nature. The presence of copper for the development of human growth is in the order of 0.1 mg/L respectively. Copper has more connectivity to human in daily life, which makes it more dangerous for environment bodies. The deviation from the optimal concentration of Cu (II) ion in the human body leads to several health issues. In this work a simple Thiourea based simple S-S Disulphide bridged dimeric chemosensor probe (CNS) has been designed, synthesized, and successfully characterized for the specific recognition of Cu²⁺ ions. The CNS was synthesized in one step reaction between Cystamine dihydrochloride and 1-Naphtylisothiocyanate. The sensor was isolated purely and it is completely soluble in DMF solvent and hence all fluorescence studies was carried out using DMF. Sensing behavior toward various metal ions (Ag²⁺, Hg²⁺, Cu²⁺, Co²⁺, K⁺, Cs⁺, Ag⁺, Pb²⁺, Zn²⁺, Mg²⁺, Fe³⁺, Ni²⁺, Li⁺, Al³⁺, etc..) was investigated by UV-Vis and fluorescence spectroscopy in DMF : H₂O (v/v, 1:1) solution. The Job's plot based on fluorescence data showed 1:1 complex formation between CNS and Cu²⁺ ion. Besides binding constant between CNS and Cu²⁺ is found to be 8.06 x 10⁻² M using Stern-Volmer equation. The effect of pH, time and reversibility of the sensor are studied. In summary we have developed and fluorescent sensor for the selective sensitive and reversible for Cu²⁺ ion in DMF. The limit of detection is proved 0.6811x10⁻² from titration and 1:1 binding ratio is proved from jobs plot method. The application studies are underway in our laboratory.

Optical characteristic studies of carbon dots derived from *J. Wynaadensis* leaf extract by microwave-assisted synthesis.

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Abstract

Carbon dots (CDs), a category of zero-dimensional carbon-based nanomaterials, have attained significant attention due to their broad range of applications from the electronic industry to the health sector. Their unique properties like tunable band gap, strong photoluminescence, high biocompatibility, lower cytotoxicity, water solubility, and ease of synthesis make them exciting candidates to explore. This work reports a microwave-assisted approach for synthesizing CDs using a novel precursor, *Justicia Wynaadensis*, at 180°C at different reaction times (3,6,9,12 mins). It was reported that the highest PL intensity was obtained for an excitation wavelength of 350nm. This study signifies how reaction time is essential in enhancing synthesized CDs' PL intensity and absorption spectra.

Intuitive Explanation of Elliptical Motion of Planetary Objects using Geometrical Approach

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Abstract.

Any celestial body moving through the influence of gravity traces the shape of a conic. Planetary systems in particular are found predominantly in elliptical orbits which can be

explained by the inverse square law of gravity and a great deal of calculus. In this study, we explain the predominant elliptical nature of the orbits of planets using a geometrical approach. The observations are backed by extending the results of Dr. Richard Feynman on the kinematic study of orbits (Mathew Sands, Richard Feynman, and Robert B. Leighton, *The Feynman Lectures on Physics, Vol. 1: Mainly Mechanics, Radiation, and Heat - 1972*). The study is completely elementary and based on the basic geometrical properties of ellipses and circles. The study revealed intriguing relations between planets' orbits and velocities, aiding the intuitive understanding of them. The geometrical evolution of ellipses from circles observed was analogous to that of the evolution of orbits from velocity space. The inferences point out that the shape of the orbit depends on the initial conditions and the circular orbit is merely a special case of elliptical orbits.

Density Functional Theory Investigation of the Physical Properties of Hydro Silyl Cyanide

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Abstract

CW Leonis (IRC +10216) is a well-studied carbon star in which many compounds have been detected. Around 11 of the detected compounds so far are silicon based or silicon radicals. Hydro Silyl Cyanide (SiH₃CN) was tentatively identified in IRC +10216 in 2014 and confirmed in 2017. Studies have been made to prepare Hydro Silyl Cyanide in laboratory and to study the inelastic scattering of Hydro Silyl Cyanide. Computational chemistry tools are highly useful nowadays, to explore the chemistry of molecules present in space. In the present study, quantum chemical calculations were carried out of the physical properties (electronic and vibrational) based on the density functional theory (DFT) method, at B3LYP level of theory, using ORCA set of programs. The molecular structure both geometric and electronic, molecular orbital analysis, spectral properties, chemical reactivity descriptors and thermo-

chemical properties were calculated and discussed. The electronic properties are calculated using Koopman's theorem. The preliminary results obtained will be presented.

Keywords: DFT, Silyl Cyanide, Astrophysics, Astrochemistry, Silicon.

References:

[1] Cernicharo, José, et al. "Discovery of methyl silane and confirmation of silyl cyanide in IRC+ 10216." *Astronomy & Astrophysics* 606 (2017): L5.

[2] Parisel, Olivier, Marc Hanus, and Yves Ellinger. "Interstellar silicon-nitrogen chemistry. I. The microwave and the infrared signatures of the HSiN, HNSi, HSiNH₂, HNSiH₂ and HSiNH⁺ species." *Chemical physics* 212.2-3 (1996): 331-351.

Schwarzschild's Method for Real Stars

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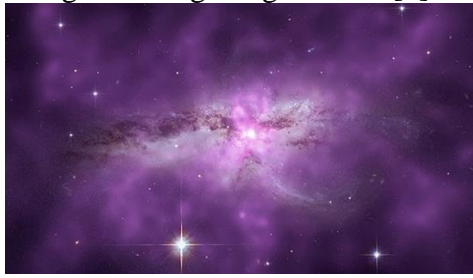
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Abstract

In this study, we have formalized our explanation of Schwartzchild's method. Beginning with the evolution of stars, we have detailed different star lifetimes in this study. By demonstrating nucleosynthesis, which concentrates on the synthesis taking place in stars, and after that comes electron scattering in space, which deals with the interactions between electrons and photons and charged particles. Then we discussed the several ways that heat can flow, and last we discussed the opacity of stars.

Keywords: Nucleosynthesis, Schwartzchild's method, Stellar opacity, Main sequence stars, Electron scattering

Figure 1: A giant gas cloud [1]



Review On Nanotechnology In Defence And Radiation Protection

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Abstract

In this study, we discussed about emerging development of nanotechnology in the field of defence research and radiation protection by means of theoretical view. Nanotechnology is the science of extremely small structures, having size of less than 100nm. In which radiation protection is an application of nanoparticles to protect from radiation exposure. Free radicals are formed through ionizing reactions, such as the photoelectric, Compton and Auger effects. These free radicals react with DNA and RNA, causing molecular alterations, improper segregation of chromosomes during mitosis, and radiation-mitotic death. These harmful effects due to radiation can be fully or partially reduced by using protective gears made of nanoparticles. And also, nanotechnology played a major role in improvisation of defence equipment. It offers tremendous potential for reducing weight and increasing the performance of materials used in any army applications.

Bose-Einstein Condensates: A New State of Matter

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Abstract

In this study, We discussed about a new state of matter named Bose-Einstein Condensates and its recent developments by means of theoretical view. It was Fritz London who proposed that superconductors and superfluids could be represented by a single macroscopic wave function in 1938. This concept of a single macroscopic wave function was experimentally vindicated in 1995 in the form of a "Super atom" when Eric Cornell and Carl Wiemann succeeded in generating the Bose- Einstein Condensates (BECs) of Rubidium atoms which was then followed by Wolfgang Ketterle in sodium atoms. Eventhough BEC was first envisioned by Albert Einstein and Young Indian Physicist Satyendra Nath Bose in 1924, it look more thanseven decades to realize a BEC. At such extremely low temperatures, a large fraction of the atoms get piled up either in the ground state or in the longlived metastable state. In otherwords,the atoms merge together losing their individual identities and become a giant matter wave (a super atom). This phenomenon is known as "Bose- Einstein Condensation".The identification of a BEC led to a flurry of activities in atom optics, condensed matter physics and quantum information processing.

Keywords: *Matter wave, State of Matter, Ultracold atom, Gauge transformation*

Peregrine soliton solutions for Vector Bose-Einstein Condensates

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Abstract

In this study, We discussed about Peregrine solutions that can be efficiently controlled by varying the external potential frequency by analytically solving two 1D coupled Gross-Pitaevskii equations with a time-dependent harmonic trap. In fact, when the frequency changed, one could see the dynamical system start to become unstable. The Peregrine solitons may be able to be stabilised as a result.

Keywords: *Matter wave, Ultracold atom, Gauge transformation, Breathers*

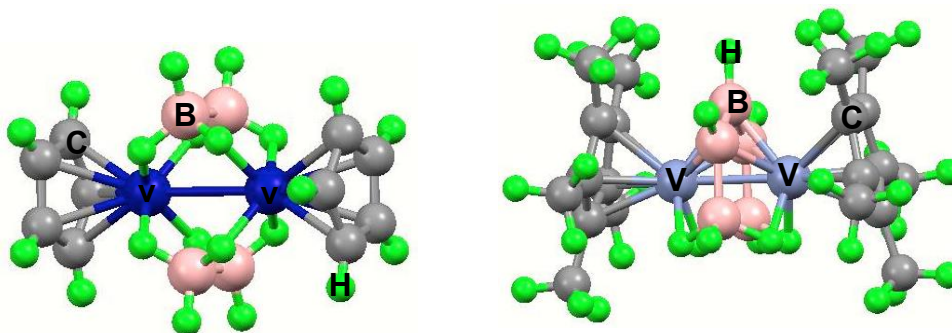
Molecular and Electronic Structure, Stability Bonding and Spectroscopic Properties of Vanadaborane Clusters – A Theoretical Study

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^a Department of Physics SF,² Department of Chemistry SF, PSG College of Arts and Science, Coimbatore, India. 641 014 ([*bskimo@gmail.com](mailto:bskimo@gmail.com))

Abstract

Metallaboranes are cluster compounds that contain direct metal-boron (M-B) bonding connecting polyhedral boranes and transition metal complexes.¹ These metallaborane compounds have potential applications in BNCT (Boron Neutron Capture Therapy), Catalysis (B-H activation), HIV inhibition, hydrogen storage devices, etc., ranging from material chemistry applications to biological applications. Bimetallic metallaboranes constitute a large part since nearly hundred of them are known and structurally characterized. It has been proved that theoretical calculations are crucial for the complete characterization of the metallaboranes and to study their bonding.^{2,3} Following previous theoretical works,^{3,4} we are currently investigating the bonding and the structural and electronic as well as the NMR properties of metallaborane clusters of Vanadium with the help of density function theory (DFT) calculations.



Interestingly, these calculations are highly informative to complete the structural characterization of these systems and to study their bonding nature. Some interesting results that we obtained will be presented.

References:

1. Fehlner, T. P.; Halet, J.-F.; Saillard, J.-Y. *Molecular Clusters. A Bridge to Solid-State Chemistry*, Cambridge University Press, New York, 2007.
2. Le Guennic, B.; Jiao, H.; Kahlal, S.; Saillard, J.-Y.; Halet, J.-F.; Ghosh, S.; Shang, M.; Beatty, A. M.; Rheingold, A. L. and Fehlner, T. P. *J. Am. Chem. Soc.*, 126 (2004) 3203-3217.
3. Geetharani, K.; Krishnamoorthy, B. S.; Kahlal, S.; Mobin, S.; M. Halet, J-F.; Ghosh, S., *Inorg. Chem.*, **2012**, *51*, 10176-10184.
4. Bharathi, K., Beerma, L., Santhi, C., Krishnamoorthy, B. S. and Halet, J-F., *J. Organomet.*

Chem., 792 (2015) 220-228.

Molecular Structure, Stability and Spectral Studies on Tin(IV) Porphyrins – A Computational Study

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Abstract

Tin with electronic configuration $[Ar]5s^25p^2$ and tin compounds are well known for their importance in industries and in biological applications. Artificial photosynthesis and understanding the exact mechanism of the photosynthesis by means of bio-inspired molecules and photo-energetics are thirst-ful areas of research for many groups. We have studied the geometrical and electronic structural features of the tin(IV) porphyrins, which are promising candidates for modelling bio-inorganic chemistry. The water soluble nature, central Sn^{4+} environment similar to the centre of chlorophyll, easy accessible through two step synthesis and suitable redox potential for water splitting are the main reasons for the known Sn(IV) porphyrins, as promising candidates for studying bio-inorganic chemistry¹. Density Functional Theory (DFT) calculations are promising tools for the complete structural characterization of the synthesized molecules as well as to bring out the real chemistry involved in the complicated reactions.^{2, 3} The molecular structures of the different $[SnPX_2]$ and $[SnTPPCX_2]$ where P = porphyrin; TPPC = 5,10,15,20-tetrakis(p-carboxyphenyl)-porphyrin; X = Cl, Br, OH, CO, HCN, were optimized using the DFT method at PB86/TZVP level. The optimized geometrical structures and the DFT computed 1H , ^{13}C and ^{119}Sn spectroscopic parameters are compared with the experimental values. The important electronic structural and the bonding features studied will be presented.

References: 1. A. M. Manke et al., *Phys. Chem. Chem. Phys.*, 2014, 16, 12029.

2. B. S. Krishnamoorthy et al., *Inorg. Chem.*, 2012, 51, 10375.

3. V. Nagalakshmi, R. Nandhini, V. Brindha, B.S. Krishnamoorthy, K. Balasubramani, *J. Organomet. Chem.*, 2020, 912, 121175.

Molecular Structure, Stability, Thermochemical and Spectral Studies on Kaempferol and It's Derivatives – A Theoretical Investigation**S. R. Nisha, V. Brindha and B. S. Krishnamoorthy***¹*Department of Chemistry SF, PSG College of Arts and Science, Coimbatore, India.641014.*Corresponding Author: bskimo@gmail.com**Abstract**

Kaempferol with the molecular formula $C_{15}H_{10}O_6$ and IUPAC name 3,4',5,7-tetrahydroxyflavone is an important flavonoid and possess many medicinal values. It occurs in tea, numerous fruits and vegetables. It is well known for its anti-inflammatory property. It is also used to reduce the risk of chronic diseases, especially cancer including intervertebral disc degeneration and colitis, as well as post-menopausal bone loss and acute lung injury. Kaempferol has anti-cancer effect, and has been demonstrated to protect the liver, the cranial nerve and heart function also prevent metabolic diseases. It is a non-toxic, low price dietary ingredient, which has a very large economic value.¹ Due to its wider medicinal values experimental and computational studies on kaempferol is an active area of research in recent years. We have studied the geometrical and electronic structural features of the kaempferol and its derivatives which are promising candidates for the treatment diseases related to bone. Density Functional Theory (DFT) calculations are promising tools for the complete structural characterization of the synthesized molecules as well as to bring out the real chemistry involved in the complicated reactions and also to modeling new molecules.^{2,3} The molecular structures of kaempferol and its derivatives, were optimized using the DFT method at PB86/TZVP level. The optimized geometrical structures and the DFT computed 1H and ^{13}C spectroscopic parameters are compared with the experimental values of related compounds. The important electronic structural and the bonding features studied will be presented.

References:

1. Jie Ren, Yifei Lu, Yanhong Qian, Bozhou Chen, Tao Wu, Guang Ji.
 2. B. S. Krishnamoorthy, A. Thakur, K. K. V. Chakrahari, S. K. Bose, P. Hamon, T. Roisnel, S. Kahlal, S. Ghosh, J-F. Halet, *Inorg. Chem.*, 2012, 51, 10375.
 3. V. Nagalakshmi, R. Nandhini, V. Brindha, B.S. Krishnamoorthy, K. Balasubramani, [*J. Organomet. Chem.*](#), 2020, **912**, 121175.
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Molecular Structure, Stability and Spectral Studies on (6-o-β-D-Glucopyranosyl –β-D-glucopyranasyl)oxy](phenyl)acetonitrile and It’s Derivatives - A Theoretical Investigation

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Abstract

Amygdalin with the IUPAC name (6-o-β-D-Glucopyranosyl –β-D-glucopyranasyl)oxy](phenyl)acetonitrile, was isolated for the first time in the 19th century in 1830. Amygdalin is called interchangeably vitamin B17 or laetrile. Typically sourced from apricot pits and bitter almonds, amygdalin is used to make laetrile. Laetrile is often claimed to treat cancer naturally.¹ Amygdalin is extracted from kernels of apricots and other plant species from the genus Prunus. Many studies claim the anticancer activity of the amygdaline as well as its toxic effect. Computational studies have proved to be crucial for characterizing the molecules in a complete manner. We have used Density Functional Theory (DFT) methods to study the structural preferences and reactivity of amygdaline and its derivatives. The initial results show that the possible stability of the amygdaline derivatives and the understanding about the mechanisms involved.

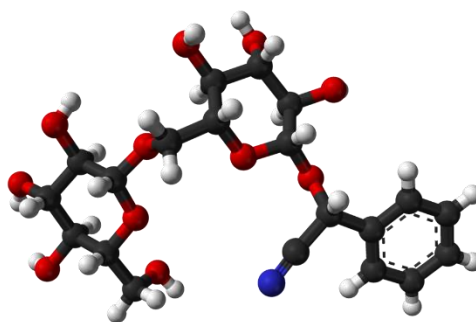


Fig.1. Molecular Structure of (6-o-β-D-Glucopyranosyl –β-D-glucopyranasyl)oxy](phenyl)acetonitrile

Key words: *Amygdaline: cyanide: DFT; NMR;*

References: A. Arshi, S. M. Hosseini, F. S. K. Hosseini, Z. Y. Amiri, F. Hosseini, M. S. Lavasani, H. Kerdarian, M. S. Dehkordi, *Mol. Biol. Rep.*, **2019**, *46*, 2059-2066.

Glycine sol-gel preparation and magnetic , optical properties of microporous Ca₂Co₂O₅

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Abstract

Glycine can be used to prepare pure Ca₂Co₂O₅ (CCO-225) ceramic powder, serving as both a gelling agent and a fuel for burning. The production of single-phase Ca₂Co₂O₅ was verified by the X-ray diffraction pattern of a sintered sample at 800°C and by thermal analysis. The acquired samples have a diffused porous platelet-like shape, according to the SEM picture, and their grains are between 150 and 300 nm in size. Due to its large band gap energy of 3.50 eV, CCO-225 ceramic material has a wide range of optical and electrical applications.

Removal of heavy metals from textile effluent using natural adsorbents

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Abstract

Effluents from the textile industries have an adverse effect on the environment as it contains large amount of heavy metals. These heavy metals can be highly toxic and so the effluent should be degraded and it should be dye free before its disposal. For degradation, natural adsorbents such as garlic peel, groundnut shell, onion peel and other such organic matters which are left as wastes can be used. These natural adsorbents have no harm to the environment and thus it protects the whole world from a catastrophe.

**Evaluation of Removal of Mercury (II)
Using Bicarbonate washed Cyprus rotundus Carbon**

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Pyrolysis, chloride, carbonate, sulphate and acid process were used to prepare activated carbon which was prepared from the roots of *Cyperus rotundus* plants. The above activated carbon's Hg (II) removing capacity was found out by carrying out experiments. The above set of experiments were also done with commercially activated carbon and its ability for Hg (II) removal was also found. The results from the about experiments were tabulated and compared. By using different parameters like pH, carbon dosage and concentration, the above set of experiments were carried out and tabulated. Equilibrium isotherms were found using Langmuir and Freundlich isotherms and plotting graphs. The adsorption ability of carbon activated from the above processes were found out using Langmuir adsorption isotherms. In the above set of experiments the R^2 values found using both the isotherms are in (CAC) in distilled water and tap water respectively. It was found that the R^2 values obtained for both the isotherms are in good agreement. The above experiment can be used to determine the adsorbing ability of Bicarbonate washed *Cyperus rotundus* carbon and commercially activated carbon. The above experiment follows pseudo first second kinetics. From the above experiment, it is evident that Hg (II) obtained from industrial effluents can be effectively removed using Bicarbonate washed *Cyperus rotundus* carbon.

Keywords: Hg (II) removal BCRC, CAC.

Performance Improvement of Design Methodologies, In Data Dominated Embedded Systems.

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Abstract

During the age of digital information, numerous cutting-edge and intricate electronic systems were developed. The acronym DDES stands for "data dominated embedded system." This type of system takes in one stream of data and converts it into another stream of data. In addition to more general design concerns, such as modeling, synthesis, and the exploration of design space, application-specific design optimizations have the potential to bring about adequate improvements in the DDES. The DDES are required to operate effectively in terms of performance metrics (including hardware area, power consumption, and computing speed), as well as fulfill a set of predetermined criteria.

In order to narrow the scope of this investigation and conduct a concentrated analysis, three distinct applications will be investigated here for performance enhancements.

I. A frequency transformation system with complex-valued components.

II. A system for the transformation of real-valued frequencies.

III. The dual mode floating point instruction designed specifically for special purposes Fused-Multiply-Add (FMA).

Keywords: *Data Dominated Embedded System (DDES), Frequency transformation, Real valued frequency, Fused-Multiply-Add (FMA).*



**MATHEMATICAL
SCIENCES**

Regularity in Compliment and Union of Hesitancy Fuzzy Graphs

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Abstract

J. Jon Arockiaraj introduced the concept of Hesitancy Fuzzy graph (HFG), a graph in which the vertices and edges are assigned with a degree of membership, non-membership, and hesitancy. He also introduced a regular HFG (if each vertex in a HFG has same degree, then it is said to be a regular HFG). Union of two HFG G_1 & G_2 was defined when $V(G_1) \cap V(G_2) = \phi$. In this paper, we defined the union of two HFGs when $V(G_1) \cap V(G_2) \neq \phi$ and studied the regularity of union of HFGs and proved some results. Some results on regularity of complement of a HFG is also discussed.

Analysis of Thermal Transmission and Entropy Production in a Hybrid Nanofluid Filled Square Chamber Having a Rectangular Solid Body

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Abstract

In the modern world researching novel and optimizing existing methods is a key contributor of analyzing various physical systems. This work deals with thermal transmission and entropy production of a hybrid nanofluid filled enclosure having a rectangular solid body placed inside. The solid body is considered as isothermal, heat generating and conducting respectively. The heat transmission through a solid body is modeled by a time dependent nonlinear partial differential equations. The governing equations, formulated in dimensionless primitive variables with corresponding initial and boundary conditions, are worked out by using the finite volume technique with the SIMPLE algorithm on a uniformly staggered mesh. The influence of nanoparticles volume fraction, heat generating parameters and external force on energy transport and flow patterns are examined for the Rayleigh number $Ra = 10^7$. The results would benefit scientists and engineers to become familiar with the analysis of convective heat transmission, and the way to predict the better heat transfer rate in advanced technical systems, in industrial sectors including transportation, power generation, chemical sectors, passive cooling system for the electronic devices, etc.

Impact of Undulations on Magneto-Free Convection Combined with Entropy Generation of Hybrid Nanofluid in a Partially Heated Wavy Chamber

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Abstract

Optimization of cooling systems for electronic gadgets is one of the serious challenges in the modern and engineering world. The core aim of this research is to investigate numerically free convection combined entropy generation in a wavy cavity having a partial heater on the bottom wall under the effect of magnetic field. The vertical walls of the cavity are maintained at cold temperature (T_c), while the horizontal borders are fixed as insulated except the heating portion. The working fluid i.e., hybrid nanoparticles (combination of Cu & Al_2O_3) dispersed with base fluid (H_2O) is chosen in this investigation. The governing partial differential equations are formulated in the form of dimensionless vorticity-stream function and its numerical solutions are solved by finite volume method. The pertinent parameters under consideration are number of undulations ($N = 0-3$), volumetric nano additives ($\phi = 0.0-0.04$), Hartmann number ($Ha = 0$ & 50), magnetic tilted angle ($= 0^\circ-90^\circ$) and dimensionless temperature difference ($\Omega = 0.001-0.1$) on the isotherms, streamlines, entropy isolines, overall mean Nusselt number and average entropy generation strength. The results found that the addition of hybrid nanofluid leads to enhance the overall heat transfer rate. Also, growth of the undulation number leads to decrease the mean Nusselt number. Moreover, the mean Nusselt number decreases with increasing the Hartmann number. Finally, the reported study will be useful in analyzing the magnetic free convection of hybrid nanofluid with entropy generation in complex geometries.

Keywords: *Entropy generation; free convection; Hybrid nanofluid; Wavy cavity.*

Gradation of Openness In Fuzzy Double Topological Spaces

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Abstract

In this paper the concept of gradation of openness is discussed in fuzzy double topological spaces. Definitions of gradation of openness, closedness, closure of gradation of openness, fuzzy double topology induced by gradation of openness are defined in fuzzy double topological spaces. Related properties and theorems are proved.

Keywords: *Fuzzy Set, Fuzzy Topology, Fuzzy double set, Fuzzy double topology, Fuzzy*

double gradation of openness, Fuzzy double gradation of closedness.

Pivot Point on Simplex

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Abstract

We study the progress of pivot theorem from classical Pivot theorem to multidimensional pivot theorem. "If points are marked on each side of a planar triangle one on each (or on a side's extension) then three circles (each passing through a vertex and the marked points on the adjacent sides) are concurrent at a point M". This result is well known in planar geometry as Miquel's theorem. Pivot theorem is a special case of Miquel's theorem, where all three marked points are non collinear. However here we discuss about multidimensional generalization of pivot theorem. Multidimensional generalization of pivot theorem state as "If points are marked on the edges of a simplex in n-space, one on each, and a sphere is drawn through each vertex and the points marked on those edges, which meet in it. Then these spheres all meet in a point". Here we studied about the existence and uniqueness of pivot theorem in n simplex.

On Some Temporal Fuzzification Functions of Pythagorean Fuzzy Sets

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Abstract

Temporal fuzzification of Pythagorean fuzzy sets (TFPFS) refers to the formulation of membership and non-membership functions of Pythagorean fuzzy sets. Some standard fuzzification functions of TFPFSs are defined for dynamical systems with vagueness. In this work, a few fixed models that take time into account as an additional parameter are used. The issues of SARS-associated corona virus infection at various temperatures are illustrated using a TFPF model. A fuzzification controller for TFPFS can be designed using the suggested techniques.

Keywords: *Fuzzy sets, Pythagorean fuzzy sets, Temporal Pythagorean fuzzy sets,*

The Level Cardinality of Fuzzy Module Under Z-Module Homomorphism on Z_n

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Abstract

In the Z -module Z_n , if the sum of the powers of the prime factors of n is r , then the level cardinality of any fuzzy module λ on Z_n is less than or equal to $r + 1$. We have the homomorphic image of a fuzzy module of an R -module is a fuzzy module. In this paper, we are considering the Z modules $Z_n, n \in Z^+$ and the fuzzy module homomorphism between Z_n and Z_m where $m, n \in Z^+$. Let $f : Z_n \rightarrow Z_m$ be a Z -module homomorphism, and λ is a fuzzy module on Z_n with level cardinality r , then the fuzzy module $f(\lambda)$ on Z_m can have level cardinality upto $r + 1$. In the Z - module homomorphism $f : Z_n \rightarrow Z_m$ with $\gcd(n, m) = p$, a prime and λ is any fuzzy module on Z_n with any level cardinality, then the fuzzy module $f(\lambda)$ on Z_m has level cardinality atmost 3.

Advanced Geometric Mean Technique Involving Fuzzy Operators for Solving Solid Transportation Problem under Pythagorean and Fermatean Fuzzy Environment

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Abstract

Solid transportation problem is a special kind of linear programming problem. Stock, necessity and transport are the three bounds in the solid transportation problem. In this paper, a new algorithm is established to solve the Pythagorean fuzzy solid transportation problem involving the Pythagorean fuzzy weighted averaging operator. The proposed algorithm is applied to evaluate the optimum solution of the Pythagorean fuzzy solid transportation problem and also the Fermatean fuzzy weighted averaging operator is introduced in the algorithm to solve the solid transportation problem and obtain the optimum solution of the STP under Fermatean fuzzy environment. The method is very easy and simple to interpret. It brings the optimum solution for the various distribution problems that involves these three terms. With the benefit of a numerical example, the advanced algorithm is illustrated. Also the solution obtained under Pythagorean fuzzy environment involving PWAO and Fermatean fuzzy environment involving FWAO are analyzed.

Keywords: Solid transportation problem, Pythagorean fuzzy set, Fermatean fuzzy set, PWAO, FWAO, geometric mean.

MHD Natural Convection Heat Transfer and Entropy Generation of Hybrid-Nanofluid in a Partially Open Cavity with Heated Baffle

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Abstract

The natural convection combined with entropy generation of hybrid-nanofluid inside a partially open cavity with a heated baffle located at the center has been investigated numerically. The horizontal walls of a cavity are considered to be adiabatic while the right side is partially open and the left wall is maintained at constant temperature (T_e). The governing partial differential equations are solved by the finite volume method. The emerging parameters namely, solid volume fraction (ϕ), dimensionless temperature difference (Ω) are analyzed for a fixed value of the Rayleigh number Ra. The results are presented in the form of streamlines, isotherms, average Nusselt numbers and average entropy generation.

Keywords: *Natural convection, Entropy generation, Hybrid nanofluid, Open cavity, Heated baffle.*

Choquet Integral - A Fuzzy Set Theoretic Approach

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Abstract

In this paper the Choquet integral is defined in a new approach with respect to a fuzzy measure with membership function and some illustrations are discussed. Some of its properties are established. Also fundamental theorems are presented with respect to the null additive measure.

Keywords: *Fuzzy measure, Choquet Integral, Fuzzy set, Measurable function and Null additivity*

Dynamics of Fractional Order Omicron Variant Covid-19 Transmission Model With Quarantine Isolation And Environmental Viral Load

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Abstract

The dynamics of COVID-19 with the omicron variant is briefly discussed through mathematical analysis. A novel approach to this kind of omicron model, we investigated the existence and stability of this infectious model using Caputo – Fabrizio fractional derivatives. The results are obtained using Laplace transform techniques and fixed point theory in Banach space.

Keywords: *Caputo Fabrizio derivative, COVID-19 model, Laplace transforms method, fixed point technique.*

Solving Fuzzy Assignment Problem of Pythagorean Fuzzy Numbers Exploiting a Software Tool

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Abstract

This paper consists of a new method to solve the assignment problems in the pythagorean fuzzy domain. In this work, working hours / working cost are considered as pythagorean fuzzy numbers. A new ranking procedure is used to convert pythagorean fuzzy numbers into a crisp number. Optimal solutions have to be found by using software techniques for minimization, maximization and unbalanced assignment problems. In the end, numerical examples are solved by using the proposed method.

Fuzzy Economic Order Quantity Model with Order Processing Cost Reduction and Permissible Delay in Payment: as Game Theoretical Approach

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Abstract

The aim of this paper elucidates the economic order quantity vendor and buyer inventory model with order cost reduction and permissible delay in payments in fuzzy environment using game theoretical approach. We have considered vendor and buyer as two players of the game. The main focus is both the players wish to minimize their costs. Both of them agree to maintain optimality principle of Nash algorithm and they interact between them. To get Nash equilibrium, game theoretical approach is applied. In this study, the crisp model is developed to minimize the total cost and in this crisp model, different social costs are precisely known. However, in reality, these parameters are imprecise in nature. The fuzzy total cost function is defuzzified using Ranking function and which is illustrated and solved.

Keywords: *EOQ model, Nash equilibrium, Vendor and Buyer, Fuzzy non-cooperative game, Ranking method.*

Analysis of the Coupled System of ψ Hilfer non Linear Fractional Differential Equations with Riemann-Liouville Integral Boundary Conditions

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Abstract

This article investigates the existence and uniqueness of the solution to the coupled system of ψ -Hilfer non-linear fractional differential equations with Riemann-Liouville integral boundary conditions. In a special working space, the Banach contraction principle and the Leray-Schauder non-linear alternative are used to establish uniqueness and existence respectively. An example is provided to demonstrate our results.

Keywords: *Existence and uniqueness, Fractional differential equation, ψ -Hilfer fractional derivative, Leray-Schauder non-linear alternative.*

Gradient Descent-Based Error Forecast Technique to Magnetohydrodynamic Nano-Fluid Flow over a Stretching Sheet

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Abstract

Many engineering disciplines in the specializations of chemical and metallurgy procedures are related to the flow of hydrodynamic through a stretching surface. Therefore, many studies concentrated on the convective phases of nanofluid models that deal with heat and mass transmission. This investigation addresses the flow of MHD incompressible nanofluid towards a stretching surface with radiation impact. The modeled PDEs are transmuted into ODEs by treating the similarity transformation. Later, a code created in Wolfram Language solved the problem numerically. The pertinent parameters are scrutinized via graphs to deliver the applicability of the present model. Based on the quantitative measurements, the physical quantities are predicted by employing a machine learning approach. This study exhibits that the data-driven analysis of the gradient descent algorithm improves the practical applications and research techniques of fluid mechanics. The current optimization technique provides a strong and intelligent viewpoint on industrial processes, such as polymer extrusion, rubber sheet production, metal processing, etc.

Keyword: *Gradient Descent Algorithm, Machine Learning, Magnetohydrodynamics, Similarity transformation, Stretching Surface.*

Existence of Solutions of non-Instantaneous Nonlocal Impulsive Differential Equations with Deviation of Arguments

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Abstract

Several studies have reported Non instantaneous Impulses theory in Banach spaces. Here we present and analyze a non-instantaneous impulsive system represented by nonlocal and nonlinear differential equation with deviated argument in the same space. The proof is based on semigroup theory and fixed point method. Finally, we offer an example to show the utilization of these theoretical outcomes.

Keywords: *Differential equations with Impulses, Fixed point theorems, Semigroups of Linear operators.*

Necessary Conditions for the Existence of Triple Positive Solutions for Fractional Integrodifferential Boundary Value Problems at Resonance

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Abstract

The existence of triple positive solutions to a class of resonant fractional integrodifferential equation boundary value problems is deduced using the theory of fixed point index. The spectral theory and some new height functions are also used for seeking the positive solutions. The nonlinearity involves an arbitrary fractional integral and permits singularity.

Keywords: *Fractional derivative, Integrodifferential equation, Triple positive solution, At resonance, Singularity.*

Prediction of Heat Transfer in Multi-Physics Problems

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Abstract

A steady, laminar, two-dimensional stagnation point flow of a hybrid Nano fluid towards a stretching/shrinking cylinder has been examined. The hybrid Nano fluid taken is a colloidal suspension of alumina (Al_2O_3) and copper (Cu) in the base fluid water. The governing partial differential equations are transformed into a system of ordinary differential equations using appropriate similarity transformations. This system of equations is solved using the homotopy analysis method (HAM). It is observed, that the solution is not unique in the shrinking region for certain parameters. It is also found, that the heat transfer within the system enhances as certain parameters like Reynolds number are increased.

Key words: *Heat transfer, shrinking/stretching cylinder, Hybrid Nano fluid*

Mixed Censoring Schemes for Estimating Reliability Sampling Plans using Log-Logistic Distribution

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Abstract

In Reliability sampling plans, life testing of items is made to analyse whether to accept or reject a lot. Censoring schemes generally play an important role in estimating the reliability sampling plans. This article focuses on combining the Time censoring and Failure censoring schemes for efficient decision making on the incoming lots. Based on the mixed censoring schemes, a new operating procedure and the efficiency measures such as operating characteristic function, average sample number and average outgoing quality are obtained. Here the first stage of the reliability sampling plans is inspected with failure censoring and the second stage is done with time censoring. If the first stage of the censoring results does not lead to acceptance of the batch or lot then the second stage becomes more significant for making a unique decision. It is found that the blend of censoring gives more pressure on the producer if the quality is not maintained in the lots. Necessary tables are constructed using software to determine and select the parameters of the reliability sampling plans. Illustration is given for easy implementation in industries.

Keywords: *Log-logistic Distribution, Reliability sampling plans, mixed censoring, life testing experiments, time censoring.*

Some Properties of Fuzzy Soft Partial Isometry Operation in Fuzzy Soft Hilbert Space

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Abstract

In this paper, we define the fuzzy soft partial isometry operator and discuss about some of the fundamental fuzzy soft partial isometry operator characteristics in fuzzy soft Hilbert space. We have defined some terms associated with the fuzzy soft partial isometry operator in fuzzy soft Hilbert space.

Mathematical Inferences of Multienzyme Biosensor

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Abstract

Enzymes are the key to bio-molecular interaction either as activators or inhibitors in a reaction. Biosensors detect the signal of interaction between biological molecules with other molecules and convert them into electrical signals. The process of an amperometric multi-enzyme biosensor is a natural recognition mechanism. Multi-enzyme biosensors are based on the principle of enzyme inhibition. The enzyme kinetics depends on various conditions such as rate of inhibition, and reaction time of analyte. A non-dimensional mathematical model for an inhibitor-based multi-enzyme biosensor simulated using Mathematica tool. The equations of this model were modified according to the inhibitor effect. Nonlinear differential equations in different types of biosensors are solved using renowned numerical method. The main aim is to increase the scope of sensitivity, selectivity, and resistance to interfering agents of the multianalyte biosensor. Piezoelectric biosensors work on the principle of energy conversion namely electrochemical energy. It is used to calibrate force, pressure, and strain. It is used in domains which require quick response, ruggedness and complex operations. It is highly sensitive and consumes less power.

Application of Eigenvalues and Eigenvectors in Environmental Science using Leslie Matrix

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Abstract

The Leslie Matrix Population Model is a fairly recent innovation in mathematics, and it has been found to be very useful in determining population growth. In this work, female population has been modeled using Leslie matrix. By using fertility rates, survival rates, and base population for a given species, this model can be used to calculate population growth. The model can also be used to determine whether the population of a given species will increase or decrease over a certain period of time. The dominant eigenvalue tells us the long term population growth and the corresponding eigenvector tells us the long term age distribution. We have also discussed about three other age structure models.

Variables Multiple Deferred State Sampling Inspection Plan based on

Taguchi Capability Index
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Abstract

The special purpose sampling inspections plans, extensively used in taking lot disposition decision for the lots submitted from a continuous process, make use of the quality information from the neighbouring lots to accept or reject the lots. Multiple Deferred State Sampling Plans, one of the special purpose sampling inspection plans, utilizes the lot quality knowledge from the current lot together with the upcoming lots in order to take appropriate lot sentencing decision. In order to enhance the quality of manufacturing process, the sampling inspection plans based on process capability index is an effective methodology. In this article a Multiple Deferred State Sampling Inspection Plan based on Taguchi Index is developed. The Taguchi index (also referred as Loss based index) emphasizes on measuring the ability of the process to cluster around the target, which reflects the degrees of process targeting (centering). The operating procedure and characteristic function is derived based on the exact sampling distribution of the estimated index. The proposed plan parameters are achieved by minimizing the average sample number with respect to the conditions satisfying acceptable and limiting quality level with associated the producer's risk and consumer's risk simultaneously. The proposed plan is compared with existing sampling plans based on Taguchi index for fixed plan parameters.

Keywords: *Multiple Deferred State Sampling Plan, Operating Characteristic Curve, Process Capability Index, Taguchi Index, Variable Sampling Inspection Plan.*

Numerical Solution of Fuzzy Nonlinear Equation using Fuzzy False Position Method in MS Excel

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Abstract

Numerous software programs including MATLAB, C, Python, and other techniques are used for the majority of research on numerical solutions for solving fuzzy nonlinear equations. In this paper, we present a method for solving fuzzy nonlinear equations in MS Excel using the fuzzy false position approach. The ease of use of MS Excel's user-friendly platform is demonstrated with the use of numerical examples.

Keywords: *Fuzzy nonlinear equations, Fuzzy false position method, MS Excel, Approximate solution*

5G Connectivity Management to Rural Areas via Excellent Domination in Square Intuitionistic Fuzzy Graphs

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Abstract

5G technology has influencing the market and will keep on growing around the world. 5G Network corps has data of cell sites. These cell sites are considered as square intuitionistic fuzzy graphs. The vital parameters such as center hub, churn prediction, etc. are calculated optimally. Excellent Domination in Square intuitionistic fuzzy graphs applied in 5G connectivity management. The current study was conducted to make day to day life more helpful and productive.

Keywords: *Cell sites, square intuitionistic fuzzy graph, excellent domination.*

Very Irredundant Excellence in Fuzzy Graphs

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Abstract:

In a social network, we may exchange any node inside the network by a node in outside the network, gives a better status in the form of a new group. Such a situation can be modelled as a set S of vertices in the graph G representing the social network such that for every $y \in V(G)$ there exists $x \in S$ such that the new social group $S = (S\{x\}) \cup \{y\}$ has the same property as that of S and is possibly better in terms of external connections as well as its internal organization. Such a type of set S is called fuzzy very irredundant set.

Keywords: Fuzzy irredundant set, Fuzzy very irredundant set, very ir^f excellent-fixed, Totally very ir^f excellent

An Exploratory study on Integration of Artificial Intelligence in Influencing the Consumer buying behaviour with special reference to Online Shopping

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Abstract

This study is about how consumer buying behaviour is influenced by AI technology tools during online shopping through the Ecommerce Platform. Nowadays Chatbots, Visual Search, Voice Assistant Search are used by the customers to search for product related informations. Consumers are offered with higher- touch customer support with these types of technologies. To study the extent of AI tools acceptance level in responding the queries by the respondents. 500 respondents were chosen for the study. The data collected through the questionnaire was classified and tabulated for analysis in accordance with the outline laid down for the purpose of justifying the objective and the hypotheses framed to study how the responds are influenced by the AI tools while doing online shopping through ecommerce platforms. According to the nature of data and interpretations required, the following appropriate statistical tools have been applied Descriptive Analysis, One Way ANOVA, Chi Square test, Kappa Measure of Chi Square and gap analysis.

Keywords: Consumer Buying Behaviour, Artificial Intelligence, Online Shopping.

***Ng ω* -Separation Axioms in Nano Topological Spaces**

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Abstract:

The basic objective of this paper is to define *Ng ω* - T_0 space, *Ng ω* - T_1 space, *Ng ω* - T_2 space, *Ng ω* -normal space and *Ng ω* -regular space in nano topological spaces. Further, discussed some of the basic properties and also given appropriate examples to understand the abstract concepts.

Viscous dissipation's impact on the flow of a Casson Nanofluid over a flat surface: CuO-TiO₂/C₂H₆O₂ and TiO₂ / C₂H₆O₂

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Abstract:

The focus of this investigation was on how a viscous dissipative Casson hybrid nanofluid (ethylene glycol, titania oxide, and cupric oxide) moved and transmitted heat as it passed a flat sheet saturated with non-Darcy porous medium. By using appropriate similarity transformation, the main partial differential equalities in addition to the limit conditions were compressed to dimensionless forms. The RK-method with shooting approach was used to numerically illustrate the follow-on system of ODEs by the matching limit conditions. The research's findings were outlined for both CuOTiO₂/C₂H₆O₂ nanofluids and plain TiO₂ / C₂H₆O₂ nanofluids. The greater Casson parameter upsides increase velocity and decrease temperature profile, which are the two most important responses. Additionally, the thermal field strengthens porosity and the Eckert number. The comparison with the one that is already available is also included as a specific example in our analysis. Keywords: Hybrid Nanofluid, Non-Darcy porous medium, Viscous Dissipation

Existence and Blow up of Solutions of Three Species Cooperating Model

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Abstract:

The primary concern in spatial ecology and mathematical biology is modeling and analysis of the dynamics of biological populations by means of differential equations. Such equations arise as reaction diffusion equations where the reaction term describes both inter-specific and intra-specific equations that include both birth and death factors. Random spatial movement of species is represented by the diffusion term. In this article, we show that the blow up properties of solutions of parabolic three species cooperating model depend only on the first eigenvalue of $-\Delta$ with Dirichlet boundary condition. Furthermore, this kind of method is very useful in proving the existence and blowing up for parabolic equations, especially for the activator inhibitor type equations when the comparison principle fails

Keywords: *Global existence, Blow up, Degenerate parabolic equations.*

DESIGNING OF DOUBLE SAMPLING PLAN INDEXED THROUGH LIMITING QUALITY LEVEL USING TRUNCATED BINOMIAL DISTRIBUTION

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Abstract

Amongst the probability distributions that are used to describe the chance whose observational apparatus becomes active only when at least one event occurs is Zero Truncated Poisson Distribution (ZTPD). Shanmugam (1985) has shown that a Zero Truncated Poisson Distribution (ZTPD) can be used to model such second quality lots which have the possibility of at least one defective in the sample information. In this paper the procedure for the designing of Double Sampling Plan indexed through Limiting Quality Level (LQL) using Truncated Binomial Distribution (TBD) as the base line distribution is presented and tables are also presented for the easy selection of the plans.

Keywords: Limiting Quality Levels, Operating Characteristic Curve, Double Sampling Plan, Truncated Binomial Distribution.

MHD Flow over a Rotating Disk

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Abstract

An unsteady, laminar, three-dimensional stagnation point flow of an electrically conducting fluid, over a rotating disk moving vertically, in the presence of a magnetic field has been analyzed. The governing partial differential equations are transformed into a system of ordinary differential equations using appropriate similarity transformations. This system of equations is solved using the homotopy analysis method (HAM). The magnetic and wall suction parameters have been discussed graphically. The obtained results reveal that the velocity component decreases with an increase in the magnetic parameter.

Key words: Boundary layer, stagnation point flow, rotating disk, magneto-hydro dynamics

**Develop and Design the Plan of Single Sampling Plan for Attributes
Based on Gamma - Poisson distribution for Average Acceptance Cost**

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Abstract

This paper contributes the prediction of the average acceptance cost of the sampling plan with prior distribution as Gamma Poisson distribution using linear model approach. A Bayesian method is developed for evaluating optimum single sampling plan based on Gamma Poisson distribution. An economic study is carried out to minimize the cost of defective items remaining in an accepted batch and the cost of rejecting the batch. The performance measures are studied with OC curves and examples.

Key Words Gamma Poisson, Acceptance Cost, AQL, LQL and OC.

**An Empirical Study on Gender and Age Group Perception towards
Contactless Transaction at Retail Shops in Coimbatore Districts**

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Abstract:

This study is an empirical study on gender and age group perceptions towards contactless transactions at retail shops in Coimbatore districts. Five-point Likert scale is used to prepare a systematic questionnaire. The primary data was based on 452 out of which 353 respondents were found eligible in the form of completed questionnaire and out of which 201 males and 152 females were found eligible response. The reliability analysis result showed that the data is suitable for further analysis. The statistical test resulted that the hypothesis is rejected and showed there is a significant difference between gender and age group perception towards contactless transaction at retail shops. The main study is restricted to Coimbatore district and the analysis is based on only gender and age group perception is considered limitation of the study. This study can be extended with education wise, occupation wise and other demographic variables towards perception of contactless transaction in future studies.

Key Words: Contact less transaction, reliability, retail shops.

**Magnetite $CoFe_2O_4$ – Cu hybrid nanofluid particles in rotating cone:
An Application to solar aircraft management system****P. Priyadharshini**Department of Mathematics,
PSG College of Arts & Science, Coimbatore-641014, Tamil Nadu, India.priyadharshinip@psgcas.ac.in**Abstract**

An unsteady Casson nanofluid flow over a rotating cone is investigated in the presence of ferrous $CoFe_2O_4$ and copper Cu combined with water H_2O . The properties of hybrid nanofluid are described mathematically in this paper. The equations that control the momentum and temperature of the fluid are converted into ordinary differential equations by considering similarity transformation. A comparison study of hybrid nanofluid and mono nanofluid was carried out. Finally, a machine learning predicted model is employed to forecast the physical quantities. In order to highlight the applicability of the proposed framework, the performance of all the pertinent parameters in terms of non-uniform heat source/sink is illustrated in the form of a graph. This study reveals that the hybrid nanofluids have a greater thermal conductivity than the conventional nanofluids. The current optimization technique provides a strong and intelligent viewpoint on solar aircraft management system.

Keywords: Hybrid Nanofluid, Machine Learning, Rotating Cone, Similarity transformation.

**Quantized Mixed H_∞ and Passivity-based Filtering for Networked
T-S fuzzy Systems with Multipath Data Packet Dropouts****V. Nithya**Department of Mathematics (SF),
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This article concerns the problem of mixed H_∞ and passivity-based filtering for networked nonlinear systems with multipath data packet dropouts, quantization effects and randomly occurring parameter uncertainties. The nonlinear plant considered in this paper is modelled as a Takagi-Sugeno fuzzy system with plant rules. The data missing phenomenon is considered in both measurement and performance output signals due to the unreliable nature of communication links. Further, to reduce the network bandwidth utilization, the measurement quantization is also employed for both the outputs before transmitting through the communication channel. Stochastic variables obeying the Bernoulli distribution are incorporated in the model description to characterize the random occurrence of parameter uncertainties and data packet dropouts. With the aid of Lyapunov stability theory, a new set of conditions that are sufficient for the stochastic stabilization with mixed H_∞ and passivity performance of the augmented filtering error system is derived in the form of linear matrix inequalities. Finally, a numerical example based on mass-spring-damper model is established to demonstrate the validity of the developed filter design algorithm.

Keywords: Discrete-time Nonlinear Networked Control Systems; Randomly Occurring

Uncertainties; Quantization; Mixed H_∞ and Passivity-Based Filtering.

Nonlinear Roll Motion of Ships using Akbari-Ganji Method and Homotopy Perturbation Method: A Comparative Study

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Abstract

In this work, the non-linear second-order partial differential equation of roll motion of ships is comprised of three main components, namely the inertia forces and moments, restoring forces and moments, and damping forces and moments. Analytical expressions of roll angle in terms of time for linear-plus-quadratic damping and linear-plus-cubic damping roll motion of ships are presented using Akbari-Ganji method and Homotopy perturbation method. Also, roll velocity, restoring moment, and damping moment can be obtained. The analytical results are compared with the simulation results.

Keywords: Roll Motion; Roll Angle, Variational Iterational Method; Akbar Ganji Method.

Analysis on Omicron Variant Covid-19 Transmission Model

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Abstract

In the present work, we have analyzed the Omicron variant fractional-order COVID-19 model for simulating the potential transmission. The Picard successive approximation technique and Banach's fixed point theory have been used for verification of the existence and stability criteria of the model. Computations are carried out utilizing the iterative Laplace transform method and comparative study of different fractional differential operators is done.

Keywords: COVID-19 model, Laplace transforms method, fixed point technique.

Generalization of M -Paranormal Operators

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Abstract:

Istratescu introduced M -paranormal operators as generalizations of paranormal operators. An operator $S \in B(H)$ is called M -paranormal if there exists a positive real number M such that $M^{\frac{1}{2}}\|S^2x\|^{\frac{1}{2}} \geq \|Sx\|$ for every unit vector x . In this paper, generalization of this class of

operators by considering operators $S \in B(H)$ such that

$$M^{\frac{1}{k}} \|S^{r+k}x\|^{\frac{1}{k}} \|S^r x\|^{\frac{k-1}{k}} \geq \|S^{r+1}x\|$$

where $M > 0$ is a scalar and the pair of natural numbers (r, k) taken on one of the values $(0, p + 1)$ or $(1, p + 1)$ or $(q, 2)$ or $(q, p + 1)$. This paper highlights, some properties of (p, q) -quasi- M -paranormal operators. Further, this paper analyses (p, q) -quasi- M -paranormal composition operators on L^2 space.

Keywords: M -paranormal operators, direct sum, tensor product, composition operators.



**LIFE
SCIENCES**

The gravity of menopausal problems and its effect on the quality of life among rural women

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Abstract

Demographic and epidemiological transitions have increased the life expectancy of middle-aged women, resulting in higher burden of morbidities related to menopausal symptoms and also affect the quality of life (QOL). The study aimed to assess the gravity of menopausal symptoms and their effect on QOL among rural middle-aged women of Coimbatore, Tamil Nadu, India. A community-based cross-sectional study was conducted on 390 middle-aged women 45-60 years of age by random sampling technique. The study period was from June 2021 to August 2022. The data were collected for sociodemographic factors, and relevant menstrual history using a validated questionnaire. The modified menopause rating scale was used to assess the prevalence and severity of menopausal symptoms. The mean age of menopause was 49.72 standard deviation of 4.1 years. Around 86% of the study subjects had anxiety, followed by 82% with sleep problems, a depressive mood at 81%, with physical and mental exhaustion at 78%. The most common symptom of menopause like hot flushes was reported by 41%. A statistically significant difference was seen for the mean score of symptoms like hot flushes, sweating ($P < 0.005$), bladder problems ($P < 0.003$), and joint and muscular discomfort ($P < 0.016$) among the selected subjects. Nearly 73% of the study subjects were examined with poor QOL. The psychological symptoms were reported more towards poor QOL in these women of rural background. To manage the menopausal symptoms and to improve the QOL of menopausal women, they should be trained to tackle these symptoms through various modalities such as pelvic floor exercise, nutritious diet, physical activity, psychological counselling and meditations. Hence health policies need to be generated to sensitize and increase awareness among menopausal women.

Keywords: gravity, menopausal rating scale, middle-aged women, quality of life, menopausal symptoms

A STUDY ON THE LEVEL OF PERSONAL CARE PRODUCT USAGE AND HEAVY METAL AMONG THE COLLEGE STUDENTS OF THE COIMBATORE DISTRICT**CHANDRAN, R, ASHABANU, R***Dept. of Environmental Science, PSG College of Arts & Science, Coimbatore-641014.***Abstract**

The harmful health effects of personal care products especially cosmetics have engulfed many stakeholders of the consumerist world especially the college students section without alarm. To estimate the prevalence of cosmetic usage along with the status of heavy metal load in highly demanding Personal care products (PCPs) and to assess the experiences of Coimbatore district both male and female college students in an attempt to arouse general awareness among the students about the harmful effects of the chemicals present in their cosmetics. A total of 400 student participants were selected through a convenience sampling technique from PSG College of Arts & Science, Coimbatore. A Google form developed well designed and structured questionnaires were distributed via WhatsApp and email. The questionnaire tool was set in Tamil and English both languages. Descriptive and correlational analysis were done using SPSS version 21. Student T-test and Pearson correlation studies undertaken with P value of <0.05 were considered statistically significant. Inferential analysis revealed that 37.4% of students use these products for health and beauty-conscious aspects. But another 27.4% of them do not aware of their purpose use. They use multiple products for their skincare, and hair care activities and prefer a single brand (70.8%). Their purchase decisions were highly influenced by social media (72.6%). The demographic variables correlational studies show overall PCP usage having positive affinity against gender ($r=0.274$), age ($r=0.168$) and negative affinity towards parents' literacy ($r=-0.109$). It also found that general ($R=0.935$), economical ($R=0.319$), health attributes ($R=0.264$) and environmental (0.434) have a positive influence on overall PCP usage among students. Further, the heavy metal analysis inferred that moisturizer cream has a higher concentration of chromium (0.1345 ppm), cadmium (0.6611 ppm) and lead (0.0757 ppm) among other three products like shampoo, lipstick and nail polish. But fortunately, all these products' heavy metal levels are well within the WHO permissible limit except for Iron concentration in shampoo (0.8851 ppm), nail polish (0.9591 ppm) and moisturizer (0.8227 ppm). The overall

prevalence of using cosmetics (makeup) and the average age of first use of cosmetics were found to be quite high. Statistical analysis shows that 69.8% of students applied daily and 23.6% of students applied twice to thrice daily. Consequently, this makes a gross percentage of 93.4% among college-going Saudi students who applied makeup on daily basis. The findings have shown that 93.2% of female and married medical students use cosmetics twice/thrice daily. Similarly, 6.8% of female and married medical students use cosmetics once daily. The findings have shown that 82.9% of female and unmarried medical students possess knowledge about cosmetics. Similarly, 17.1% of female and married medical students possess knowledge about cosmetics. This study explained the attitude of consumers towards eco-friendly products and created awareness among students about eco-friendly products and their importance to health and the environment. The over usage of cosmetics was found to be extremely high among the sampled college students and the unawareness regarding the harmful effects of cosmetics was found to be high among these students.

ASSESSMENT OF DIETARY INTAKE IN ASSOCIATION WITH BODY MASS INDEX AMONG ADULTS IN COIMBATORE DISTRICT

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Abstract

Obesity is an important risk factor for many non – communicable diseases. It has become a global public health challenge, particularly among the populations undergoing a rapid dietary transition in the developing world. The study aims to assess dietary intake and its association with body mass index among adults (20-50 Years) in Coimbatore The cross-sectional study was conducted through a random sampling method in Coimbatore district, Tamil Nadu. A validated questionnaire was administered to assess dietary intake through the snowball online survey method. The questionnaire was sent to 500 respondents and only 207 responses were received. The body mass index and waist-hip measurements were calculated with the help of anthropometric data collected. The results showed that there is a significant difference between gender and body mass index ($p <$

0.05), gender and waist-to-hip ratio ($p < 0.05$). A weak positive relationship was found between body mass index and dietary intake which consists of energy, carbohydrate, protein and fat ($p < 0.05$).

Keywords: BMI, dietary intake, overweight, obesity

Effect of MDM2 gene silencing on pAKT and p21 levels in LNCaP prostate cancer cells

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Abstract

The MDM2 oncogene plays an important role in the negative regulation of p53 tumor suppressor protein. The ubiquitin ligase function of MDM1 promotes p53 degradation while the direct binding ability of MDM2 neutralizes the transcription control mechanisms of p53. Hence, inhibition of MDM2-p53 interaction has been shown to stabilize p53 and is considered a novel strategy for cancer therapy. The mechanisms by which the MDM2-p53 interaction is regulated are not fully understood, although several MDM2-interacting molecules have recently been identified. These compounds bind to MDM2 in the p53-binding pocket and restore the p53 pathway in cancer cells by inhibiting direct binding. However, many molecular events that activate or inactivate regulatory genes remain unknown. The main purpose of this study was to evaluate and correlate the p21 and pAKT protein expressions in MDM2 overexpressed (LNCaP-MST) and MDM2 silenced LNCaP prostate cancer cells (LNCaP-MSI) using lentiviral vector-based MDM2-shRNA for gene silencing. Consequently, the LNCaP cells with shRNA-mediated knockdown of MDM2 resulted in the down-regulation of pAKT with reduced cell proliferation. Furthermore, the MDM2 silencing increased the level of p21 expression with a cooperative impact on some of the apoptosis signals.

Keywords: MDM2, Prostate cancer, MDM2 shRNA, LNCaP-MSI

Phytocomponents identification by GC MS, Acetylcholinesterase Inhibition, *In-vitro* antioxidant, and anti-cancer activity of *Combretum indicum*

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Abstract

Combretum indicum is a deciduous climbing plant native to Asia and tropical Africa (USDA-ARS, 2015) it contains polyphenolic compounds such as flavonoids, Tannins, and phenols that can demonstrate a broad spectrum of biological activities including, anti-helminthic, antioxidant activity, and anti-cancer activity. This study was carried out to determine the total phenolics, flavonoids, Acetylcholinesterase Inhibition, antioxidant activity, and anti-cancer activity in the Aqueous extract of the *Combretum indicum* leaf sample. Antioxidant activity was determined by DPPH and compared to standards. Superoxide, nitric oxide scavenging, and lipid peroxidation inhibition assays were performed and IC₅₀ values were determined. IC₅₀ values of AChE inhibition was 120.65 ug/ml. The result of GCMS shows the presence of Hexadecane, 1 – chloro, Phytol, n-Hexadecanoic acid, Dibutyl phthalate, Octa hydro 2- (1H) quinolone, Stigmasterol, and phytol at higher level concentrations. These compounds are reported to show high anti-cancer, antibacterial, diuretic, and anti-inflammatory properties. Cytotoxicity study was performed by MTT assay on Human lung cancer (A549) cells and IC₅₀ values were found to be 163.11ug/ml. The test compounds were non-toxic on African Monkey Kidney (VERO) cells expressing 80% cell viability at the highest concentration of 200ug/ml used in the study. The study strongly suggests that the compounds present in the aqueous extract can be used as a potential drug for cancer treatment. These results present a scope to further identify and characterize the compounds to study the mechanism of action.

ECOLOGICAL STATUS OF THE TEMPORARY WETLANDS IN CENTRAL TAMILNADU DISTRICT, INDIA.

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Abstract

Temporary wetlands (TW) have a distinctive assortment of uncommon and specialized plant and animal species, are often modest in size, regularly dry out, and have an abundance of water during the flood season. There is a huge variety of freshwater, saline, and marine wetlands throughout the Indian subcontinent. The local human communities have historically used the bulk of the inner wetlands, which are transient or artificial. The majority of limnological research conducted in India has focused on large, permanent water bodies, pond ecosystems, and interconnected transient wetlands. Additionally, many Temporary Wetlands (TW) in Tamil Nadu State (TNS) have the potential to be used for ecosystem services but are not yet well-documented. (TW) have excellent promise for ecosystem service purposes, but their documentation is not yet complete. Due to a lack of research, the current investigation examines the ecological state (ES), distribution of temporary wetlands (TW), and individual wetlands' human disturbance scores (HDS) in India's Central Tamil Nadu district (CTND). 75 selected wetlands were surveyed in three districts, including Karur, Namakkal, and Trichy, using a variety of techniques. Over the summer, all wetlands were hydrologically separated and parched. The TW ranged in size from 1 to 10 acres, and 80% of the wetlands were found in rural areas, 12% in semi-urban areas, and 8% in urban areas. In terms of wetland degradation, Trichy district wetlands (TDW) had the greatest amount (76% Mid Impact; MI), followed by Namakkal district wetlands (NDW); 36% MI; and Karur district wetlands (KDW); 20% MI. Generally, factor-wise wetland degradation via landscape disturbance, Buffer zone alteration, Hydrological alteration, Pollution, and habitat alteration. The present study conveys the baseline information on the ecological status and distribution of Temporary Wetlands in CTND, which will facilitate the formulation of regional-specific strategies for wetlands management study. Using this manner will suit other parts of TW and identify the ecological status and the human influence on wetlands that aid TW conservation and management decisions.

A Study on Revival of Natural Indian Dyes

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Abstract

The sole sources of fabric dyes in prehistoric times were natural colours made from roots, stems, flowers, leaves, bark, minerals, and vegetables. Throughout history, man has coloured his fabrics using various locally accessible materials. Natural dyeing is a process that employs colourants originating from plants or minerals. India's skill in vegetable dyes extends back to the Vedic era. Due to the widespread availability and low price of synthetic dyes, the majority of textile dyers and manufacturers have shifted to employing synthetic colourants. These synthetic colourants are created using hazardous chemical processes that put the environment at risk from petrochemical sources. They occasionally explode and are frequently highly carcinogenic and deadly. The aquatic life is harmed by the very poisonous dye effluents that are released into rivers. Natural dyes are gaining popularity in India, as designers transition to more sustainable fashion. Being eco-friendly is the current fashion design buzzword. As a result, clothing manufacturers are turning to natural colours. Many textile, ready-to-wear garment, and accessory manufacturers are experimenting with natural dyes for their products. It is attracting consumers who want to lessen their environmental impact as well as fashion-conscious buyers who want the 'unfinished' look or 'raw-earthy' charm of natural dyes and their flaws. It is also restoring traditional textile dyeing techniques, reintroducing dyer craftspeople. Another encouraging trend is the increased demand for natural dyes in the worldwide market, which is being driven by the need for sustainable fashion. Farmers can also benefit from growing dye-producing plants.

Keywords: Natural Dyes, Synthetic colourants, Eco-friendly dyes, Sustainable fashion

Application of natural colourants for functional textiles-A review

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Abstract

At present, people have moved consciousness towards sustainability and protecting the eco-system, and due to this lot of sustainable traditional techniques are revived. Natural colouring on textiles is one such important traditional sustainable activity. Due to their significant pollution risk, synthetic colourants used in textiles are severely criticized. Natural dyes are very safe because of their nontoxic, nonallergic, and biodegradable nature. The dyes extracted from plants, insects/animals, and minerals are proven to have better biodegradability, sustainability, and eco-friendliness. Numerous plant species have been suggested as potential sources of colourants for the textile dyeing industry as an alternative to synthetic dyes, while many of them have not yet been fully investigated. In this present sophisticated era, merely the aesthetic attractiveness of natural dyes could not capture consumers' attention. The need for clothes is rising every day, going beyond its fundamental requirements to include features like fireproof, microbial proof, UV protective, insect repellent, anti-inflammatory, wound healing, antioxidants, and so on. This article provides a details review of various research activities carried out toward the improved functional properties of natural dyed clothing.

Keywords: Natural Dyes, Synthetic Dyes, Functional Textiles, Sustainability

Aromatic diamine specificity of tender Coconut (*Cocos nucifera* L.) water peroxidases: A kinetic analysis

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Abstract

Peroxidases are ubiquitous oxidoreductase enzymes and possess broad substrate specificity thus they find applications in various physiological/biochemical processes. In the present study, the substrate specificity of tender coconut water peroxidase (TCWP) isoenzymes was studied with amine and phenolic compounds. The TCWP enzyme showed maximum activity with amine compounds and no measurable activity with phenolic compounds. Thus the substrate specificity was checked only with various amine compounds viz., aromatic, aliphatic diamine and monoamine organic compounds. Both the TCWP isoenzymes showed maximum activity at pH 5 with most of the aromatic substrates studied [*o*-anisidine (*o*-Ani), *p*-anisidine (*p*-Ani), *o*-dianisidine (*o*-D), *o*-phenylenediamine (*o*-PD), *p*-phenylenediamine (*p*-PD), benzidine (BZ)] except for diaminobenzidine (DAB), tetramethylbenzidine (TMB), where the optimum pH was found to be 5.5, and 4.5 respectively. Their substrate specificity and catalytic efficiencies were evaluated with kinetic parameters like K_m and k_{cat}/K_m respectively. Based on the K_m value the substrate specificity of TCWP isoenzymes has been given in the following order: *o*-D > DAB > BZ > *o*-Ani > *p*-Ani > *o*-PD > *p*-PD > TMB. The k_{cat}/K_m value of TCWP₁ and TCWP₂ showed the highest specificity constant with *o*-D when compared with other aromatic amine substrates. This study has given clue about the stoichiometry of the substrate binding site in TCWP isoenzymes which helps to design drugs.

Keywords: Plant Peroxidase, *Cocos nucifera*, Isoenzymes, *o*-Dianisidine dihydrochloride, Aromatic amine.

**Optimization of media components for the production of chrysomycins
by *Streptomyces* sp. OA161**

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Abstract

From enzymes to antibiotics, most of the usable bioactive molecules have been discovered from Actinomycetes. Response surface methodology has been widely used to improve production through fermentation by optimizing the media components. Conditioning of morphology is an effective technique to enhance secondary metabolite production by *Streptomyces*. Here we report that a novel conditioning method in fusion with response surface methodology enhances antibiotic production manifold. Using this novel method, it is possible to induce *Streptomyces* to become enhanced secondary metabolite producers. Further, using this combination we could enhance the production of novel antimycobacterial molecules chrysomycin A and chrysomycin B by 8 fold.

**DEVELOPING MULTIFUNCTIONAL FINISHED CELLULOSIC
FABRICS WITH SELECTED HERBAL OILS**

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Abstract

Clothes have fulfilled a variety of functions, ranging from primarily awarding protection and warmth to being a symbol of a fashion statement today. The greatest challenge of the present era is to develop nature-friendly sustainable technologies that

would make life easy and protective for the current as well as future generations. The concept of imparting various properties in a single fabric will reduce the cost of treating it with various formulations. For fulfilling these criteria, multifunctional finishing has to be applied. In this article, the process and results obtained by applying various herbal oils in the selected cellulosic fabrics were analyzed.

Keywords: Multifunctional finishing, Herbal oils, Cellulosic fabrics.

COMFORT PROPERTIES OF COTTON POLYESTER BILAYER FABRICS FOR SPORTSWEAR

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Abstract

In present years, development in active sportswear fabrics has made progress to perform a high function and achieves comfort. Today sports demand high-performance equipment and apparel. It is very important to produce sportswear with comfort, functionality and cost effective. This study aims to develop cotton/polyester bilayer knitted fabric with different structures and to understand the physical aspects and comfort aspects in terms of moisture management evaluation.

Keywords: Comfort, Moisture, Bilayer

ANALYSIS OF ARECAHUSK FIBER NEEDLE PUNCH FABRIC FOR TEXTILE APPLICATION

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Abstract

Fibres were extracted from the husks of areca nut which is also known as beetle nut and analyzed for its various properties. After the chemical analysis, the fibre is known to have lignin and cellulose contents, so it can be classified under lignocellulosic fibre. The needle-punched nonwoven fabric was developed under an optimized condition of needle penetration, depth and strokes. And the developed fabric showed potential results. Thus, the eco-friendly development of nonwoven fabric can be utilized for insulation textile manufacturing for renewable resources and not strain the environment during disposal after its service is completed.

Keywords: Agro waste fibre, Composites, Ecofriendly insulation, Needle punch, Nonwoven

ANALYSIS OF SELECTED PROTEIN RESIDUE AND NATURAL PLANT SUBSTRATE FOR ABSORBENT APPLICATION IN HYGIENE PRODUCTS

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Abstract

Absorbent polymers are commonly made from petrochemical starting materials, i.e., acrylic monomers. Special hydrogels as superabsorbent materials are widely employed in hygienic uses particularly disposable diapers and female napkins where they can capture secreted fluids, e.g., urine, blood, etc. Agricultural grade of such hydrogels

are used as granules for holding soil moisture in arid areas. The biopolymer-contained Absorbent polymers, however, possess typically higher cost and less performance than their fully synthetic counterparts. Absorbent polymers have created a very attractive area in the viewpoint of super-swelling behaviour, chemistry, and designing the variety of final applications. When working in this field, we always deal with water, aqueous media and bio-related systems. Thus, we increasingly walk in a green area becoming greener via replacing the synthetics with the bio-based materials, e.g., polysaccharides and polypeptides. This, however, is a long-term perspective. More or less, the acrylic kingdom will extend its domination in the future markets. The present article represents a different outlook; it gives an account of all types of SAP materials with a practical viewpoint from structure to usage, based on either the current literature or our long experience on these materials. The main target is appraisal the Absorbent polymers to be useful for either academics or industries.

Keywords: hygienic product, bio based material, SAP materials, Absorbent polymers.

Nano modified Scopoletin alleviates Dextran sulfate sodium induced Ulcerative colitis via regulation of inflammatory mediators

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Abstract

Nanoencapsulated polymeric Scopoletin (NEP-Sc) has a wide range of therapeutical benefits. The current study was focused on antioxidant and anti-inflammatory activity of NEP-Sc against experimental DSS-induced ulcerative colitis (UC) in mice. After the induction of UC, male BALB/c mice were administered with NEP-Sc (2.5mg/kg body weight and 5mg/kg body weight) and standard drug sulfasalazine (100 mg/kg body weight) for 10 consecutive days. Macroscopic

examination, scoring and histopathological analysis were used to evaluate the colonic damage. Body weight, diarrhea score, DAI (Disease Activity Index) score and spleen weight were observed. The mucosal levels of reduced glutathione (GSH), Superoxide dismutase (SOD) is an enzyme and its activity rather than level is used for assessment, malondialdehyde (LPO) and nitric oxide (NO) were evaluated as the parameters for measuring antioxidant status. Immunohistochemical analysis was examined to assess the inflammatory response by measuring the level of Cyclooxygenase-2 (COX-2) and anti-apoptotic marker Bcl-2. Pro-inflammatory cytokines namely Tumor Necrosis Factor-alpha (TNF- α) and inducible Nitric oxide synthase (iNOS) were measured using ELISA. All of the aforementioned parameters were found to be attenuated in DSS-induced ulcerative colitis group and NEP-Sc treated group. The observed results clearly demonstrated that nanoencapsulated polymeric scopoletin provided protection against DSS-induced UC group via regulation of oxidant/antioxidant balance, inhibiting inflammatory mediators like iNOS, COX-2, pro-inflammatory cytokines such as TNF- α , anti-apoptotic marker Bcl-2, and tumor progression *in vivo*.

Keywords: Ulcerative colitis, DSS, antioxidants, inflammation, cytokines.

INFLUENCE OF UNILATERAL EYESTALK ABLATION ON GROWTH, SURVIVAL, BIOCHEMICAL & REPRODUCTIVE INDICES IN *BARYTELPHUSA CUNICULARIS* (WESTWOOD, 1836)

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Abstract

According to FAO, IFAD, UNICEF, WFP and WHO, 2021 “India is one among the 56 countries in the world to have a large number of undernourished people.” *B. cunicularis* a freshwater crab, which is captured and sold by local communities and tribals can be an alternative cheap source of protein. This candidate species also has several advantages over fish farming. Freshwater crabs tolerate food and water scarcity during rearing and transportation. However, the rearing and seed production of these crabs is not well documented. Moreover, crabs that are reared in captivity are incapable of natural gonadal maturation and crab seed production is a major constraint in aquaculture.

Therefore, this study documents the investigations made for seed production in *B. cunicularis* by artificially inducing gonadal maturation. Male and female crabs were subjected to unilateral eyestalk ablation (removal of one eye-stalk) and assessed for growth, survival, biochemical and reproductive indices. Growth and reproductive indices were significantly higher in induced crabs after a trial period of 25 days. Data are expressed in comparison with control as “(induced/control).” Increased Daily Growth Rate in males ($0.06\pm 0.02/0.04\pm 0.006$) and females ($0.13\pm 0.06/0.03\pm 0.03$); increased Gonado-somatic Index in males ($0.40\pm 0.02/0.32\pm 0.05$) and females ($0.59\pm 0.14/0.49\pm 0.04$); reduced Heart Index in males ($0.12\pm 0.009/0.21\pm 0.005$) and females ($0.13\pm 0.017/0.14\pm 0.02$); reduced Hepato-somatic Index in males ($5.43\pm 0.87/6.05\pm 0.40$) and females ($5.45\pm 0.53/7.14\pm 0.26$) is recorded. The protein, carbohydrates and lipid content was higher in induced male gonads ($144.28\pm 6.92/88.12\pm 5.25$; $3.30\pm 0.17/3.12\pm 0.62$; $0.68\pm 0.1/0.28\pm 0.046$) when compared to control. Similarly protein, carbohydrates and lipid content were higher in induced female gonads ($238.36\pm 18.96/79.51\pm 3.63$; $13.28\pm 0.87/2.53\pm 0.41$; $0.72\pm 0.10/0.26\pm 0.06$) when compared to control. The survival rate was not less than 75% in induced crabs. Histological examination of gonads from induced and control crabs revealed gonadal stimulation in Unilateral Eye-stalk Ablation induced crabs. Increased number and size of follicles in induced female crabs; also the presence of increased spermatids in induced males is evident from histological study.

Synthesis And Evaluation of Nano Extracts of Metal Ions With *Swietenia mahagoni* Bark Extract And Its Antibacterial Efficacy On Nonwoven Fabrics

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Abstract

The *Swietenia mahagoni* bark nano herbal extracts were studied for antibacterial efficacy on the nonwoven fabric against wound infective pathogens. In the present context, silver is a commercially successful antibacterial agent, which leads the wound care market. Silver in nano form was studied by various researchers and the effects of

these antibacterial agents at various concentrations have their advantages and limitations. This study was planned to combine the bioactive *S. mahagoni* bark extract with commercially successful silver ions for the synthesis of nano solution with antibacterial efficiency. The biological method of synthesis was developed to utilize herbal plants as reducing agents. Biogenic synthesis is one of the ‘Green approaches’ where compounds of natural plants are involved in the reduction of metal ions instead of chemical reducing agents. Biologically derived substances such as flavones, terpenoids, ketones, amides, aldehydes, and carboxylic acids are the major phytochemicals involved directly in the reduction of the silver ions and the formation of AgNPs. The solutions were subjected to various characterization studies such as colour change analysis, UV-visible spectroscopy analysis and FTIR analysis. The antibacterial evaluation of spun lace nonwoven fabrics was studied against wound pathogenic bacteria such as *S. aureus*, *B. subtilis*, *E. coli* and *P. aeruginosa*.

Keywords: Antibacterial efficacy, Pathogens, Biogenic synthesis, Phytochemical and Silver nano solution.

Prevalence of Menstrual Problems, and Impact of Anthropometric, Nutritional, Psychological Status among College Going Girls (18-23years) During Menstruation in Coimbatore District

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Abstract

Adolescence is considered a serious phase in human life that needs utmost parental care, supervision and empathy because it is a transitional period of physiological and psychological growth that generally occurs throughout the period from puberty to adulthood which is characterized by immense or massive hormonal changes. The aim of this present study is to ascertain the prevalence of menstrual problems (abnormality) and the impact of the anthropometric, nutritional and psychological status of college-going girls (18-23years). It was a cross-sectional study conducted in both rural and urban areas of Coimbatore city. The structured questionnaire was distributed to 200 students as a survey tool which detailed socioeconomic, anthropometric, nutritional, Psychological and

menstrual problems with menstrual flow condition charts and physical activities. The study revealed that 70% of the participants are PG, 30% from UG students, 86% of them from the nuclear family and 66% of them from urban areas. Mostly 85% of them were non-vegetarian in that 45% of the girls consumed broiler chicken other non-vegetarians whereas the correlation between the BMI and Diet pattern has a positive sign, which shows that dietary pattern plays a major role in menstrual problems. Bleeding scale and cycle irregularity were also significantly positive in the girls who were high in BMI. 82% of the participants were irregular in their physical activities, 75% of them were facing menstrual problems and irregularity in menses, 65% of them had anxiety, stress and 45% of them were under depression during menstruation. Lifestyle modifications like regular physical activity, promoting healthy eating habits, good sleeping patterns and reduction of junk food intake should be emphasised in college health education programs to improve menstrual health.

Keywords: Menstruation, dysmenorrhea, menstrual problems, anthropometric status.

A Review Paper on Technical Textile Fiber Identification

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Abstract

Technical textiles have been defined as textile materials and products manufactured primarily for their technical and performance properties, rather than for their aesthetic or decorative characteristics. Fibre identification is the most important thing in designing a specific-purpose dress. In this study, different textile fibres are identified through technical textiles. Fibres are the key constituents of all fibrous assemblies used in any technical and nontechnical applications; hence, to utilise these materials effectively, an in-depth knowledge and understanding of their physical and chemical properties are imperative to any design structures and their expected performance criteria. The purpose of this section is to briefly review some interesting technical Fibers, characteristics and functions etc.

Keywords: Fiber Identification, Technical textiles Global and national markets, Textile-production, End-use sectors for technical textiles, Natural and synthetic fibres, bio based fiber-reinforced composites

**Diversity and Functional Profiling of Banana pseudostem weevil,
Odoiporus longicollis (Olivier) Gut Microbiome**

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Abstract

Insect guts have Microbial communities of insect guts that are opportunistic and contain relatively few microbial species as compared to mammalian guts owing to the characteristic environments for microbes in the gut potentially present specialized beneficial functions to their hosts. But some insects are also observed to contain large gut communities of specialized bacteria. Bacterial community composition generally depends on the diet or changes that occur in the internal morphology and physio-chemical conditions of the insects. Insects depend on gut bacteria for various functions like digestion, detoxification, protection from parasites and pathogens, modulation of immune responses, and even communication and an unexpected function of plastic degradation. The present study is one of the very few studies that explicitly examine insect gut bacteria in weevils and the first of its kind in *Odoiporus longicollis* (Olivier) through Next Generation Sequencing (Illumina). The preliminary observation with QIIME indicated that a variety of bacterial phyla are commonly present in insect guts, including *Gammaproteobacteria*, *Firmicutes* including *Lactobacillus* and *Bacillus* species, *Bacteroidetes*, *Alphaproteobacteria*, *Betaproteobacteria*, *Clostridia*, *Actinomycetes*, *Spirochetes*, *Verrucomicrobia*, *Actinobacteria*. Higher community diversity was found to be in the guts of the insect sample collected. There was no clear segregation between samples of Tamil Nadu and North East India in PCoA plots. Qualitatively similar results for binary Jaccard index, abundance Jaccard index and weighted UniFrac distance were noticed. These indicated that the weevils' microbial composition was similar. Functional

profiling of the major constituents with PICRUS_t revealed enzymes might be important for organic carbon turnover and nitrogen and sulfur cycling processes. The diverse abilities of the insect gut microbiota and their products of the potential of gut microbes have may find applications in the medical, engineering, and industrial grounds.

Keywords: *Odoiporus longicollis* (Olivier), NGS, QIIME, PICRUS_t.

**PRODUCT FORMULATION AND EVALUATION USING
FERMENTED INDIAN COFFEE VARIETIES WITH *Saccharomyces
cerevisiae* culture**

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Abstract

Coffee plays a major role in everyday life. It is rich in antioxidants. Coffee seeds (robusta and peaberry varieties) were ground into powder and the fermentation process was carried out with *Saccharomyces cerevisiae*. The fermented products were used for further analysis to check the antioxidant level, polyphenol content, flavonoid content, and tannin content. After the evaluation, the fermented coffee powder can be formulated into edible gummies. In the fermented coffee powder, robusta showed a higher level of antioxidants (100%), superoxide dismutase activity (82.65%), Flavonoid (81.15%), and tannin (42.85%). Peaberry shows higher polyphenol (51.4%). The results show that the robusta variety was good in antioxidant levels than the peaberry. The robusta is a great source for product formulation. The Gummies are made by using gelatin, sugar syrup, citric acid, fermented coffee powder (robusta variety) and non-fermented coffee powder (control). Then the gummies were taken for further analysis, like antioxidant activity, protein estimation, flavonoid content, texture, and sensory evaluation with the control sample. The results also indicate that fermented coffee powder gummies showed the highest values in antioxidant (47.08%), Protein (71.6%), and polyphenol (55.15%). In the sensory evaluation, the robusta was preferred to good than the control gummies. It is a preliminary study, it could be useful for application in the food and beverage industries.

Keywords: antioxidant, *Saccharomyces cerevisiae*, flavonoid content

Deciphering the Active Functional Groups in the Cell Wall of Indigenous Bacteria, *Enterobacter cloacae* for Its Usage as a Potential Candidate in Nickel Bioremediation

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Abstract

Heavy metals are metallic elements with high atomic weights and possessing densities five times higher than water. High concentrations of non-essential heavy metals in soils and water resources threaten the environment and all living creatures. Most of the difficulties implicated in remediation can be met by indigenous microorganisms repossessed from contaminated environments, which play a fundamental role in the biodegradation and bioremediation of heavy metals. Microbial bioremediation is an emerging promising tactic to diminish the concentration of heavy metals in the atmosphere by sequestering and modifying the metallic compounds. Natural environs are contaminated by lethal, mutagenic, and carcinogenic heavy metal wastes expelled from foundry industries. Metal-contaminated foundry soil sample was collected, and the metal concentration was estimated by Atomic Absorption Spectroscopy (AAS). Various heavy metals were detected in the collected soil sample which includes cadmium, lead, nickel, zinc, manganese, copper, chromium and cobalt. By employing serial dilution and plating in metal amended medium, sixteen bacterial strains were found to be significantly tolerant towards various heavy metals. Among 16 different isolates, *Enterobacter cloacae* possessed a higher MIC value of 1000 ppm for nickel and so the strain was chosen for further studies. Morphological, cultural, biochemical characteristics and 16SrRNA sequence analysis revealed that the selected isolate was *Enterobacter cloacae*. Various factors influencing the metal uptake like contact time, pH, temperature, dosage concentration, and initial metal ion concentration were studied to optimize the effectiveness of *Enterobacter cloacae* in metal removal. *Enterobacter cloacae* showed an effective metal removal at a rate of 70.58% for nickel at optimised conditions. The functional groups present in the metal binding site responsible for active metal binding were investigated by Fourier transform infrared spectroscopy (FTIR). Functional groups like carboxyl and amino groups were involved in nickel binding. Thus *Enterobacter*

cloacae possessed a higher metal removal ability due to carboxyl and amino groups imbibed in it. This study implies the usage of indigenous bacterial flora as the best candidate for in situ bioremediation. Thus it could be concluded, that *Enterobacter cloacae* could constructively remediate nickel present in the metal contaminated site as it possessed higher metal tolerant ability together with active functional groups which are responsible for metal binding. Thus the usage of *Enterobacter cloacae* as a potential candidate to remediate the metal contaminated site would render our natural ecosystem clean and safe for living.

Keywords: Heavy metals, Nickel, Atomic Adsorption Spectroscopy, Minimum Inhibitory concentrations, *Enterobacter cloacae*, Fourier transform infrared spectroscopy.

ISOLATION, IDENTIFICATION, CHARACTERIZATION AND OPTIMIZATION OF BACTERIAL PIGMENT PRODUCTION AND ITS APPLICATION IN TEXTILE INDUSTRIES.

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Abstract

In worldwide, textile industries are one of the growing industries where they use synthetic dyes which are harmful to our environment. To, overcome this problem only by introducing natural pigments from plants, animal and microbes. In our study, we focused on this problem. So, as a microbiologist we used bacteria as a source for pigments to dye a cloth. For this work, we isolate pigmented bacteria from soil samples. The isolates were undergoing for cultural, biochemical and molecular characterization to identify the pigmented bacteria. They were identified as *Serratia marscesnes*, *Pseudomonas* sp M11 and *Erythrobacter* sp. The bacteria were cultivated for pigment production by optimization study. The best optimization media contains pH -7, Temperature- 30°C, carbon source- maltose and glycerol; nitrogen source - peptone and incubation period- 48-72 hours. After pigment production, they were extracted by extraction method using different solvents. Then, the pigments were characterized through FT-IR analysis. Then, the pigments were taken for application studies where *Serratia marcesnes* produced

prodigiosin (red); *Pseudomonas sp* M11 produced carotenoid (yellow) and *Erythrobacter sp* produced lipoquinone (orange). From application studies and wash performance the best result shown by *Serratia marscenens* producing prodigiosin pigment where, the lipoquinone produced by *Erythrobacter* shows moderate and carotenoids by *Pseudomonas sp* M11.

FORMULATION AND EVALUATION OF MILLETS BASED VALUE-ADDED PRODUCT

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Abstract

Millet is a highly nutritious food recommended for children and elders. Millets are considered to have immense significance because of their nutritional and nutraceutical potential. Barnyard millet (*Echinochloa species*) is superior to major and minor millets. Barnyard millet grains are a rich source of dietary fiber, iron, zinc, calcium, protein, magnesium, fat, vitamins, and some essential amino acids. The purpose of this study was to blend sprouted barnyard millet and red rice and amaranth seed flour (**BMRAF**). Sprouted barnyard millet flour at 80%, red rice flour at 10% and 10% of amaranth seed flour were blended to develop novel cupcakes. Examine and assess the effect of this blend on nutritional (iron and calcium enrich cupcakes) and sensory quality. Sensory evaluation of developed products was carried out using a 5-point hedonic scale. The samples were further analyzed for moisture, ash, crude fat, crude protein and crude fibre and dietary fiber minerals using standard methods. The nutritional composition of these proportions of (80: 20) and (70:30) and (60:40) iron and calcium enrich cupcakes had the highest percentage of all the nutrients namely carbohydrate, protein, fat, moisture and ash content. In V₃ sample (60:40) 60 per cent sprouted barnyard millet and 20% red rice and 20% amaranth seed flour contained 12.7g protein, 9.5g per cent fat, 39.1g per cent carbohydrate, energy 293Kcal, total sugar 31g per cent respectively. The developed products had dietary fibre calcium, sodium, potassium, phosphorus, iron and vitamin-C ranging from 2.9-3.2,12.3-13.9,2.0-2.4,56.9-68.6,1.22-1.48,102.3-107. 8, mg/100 g on a

dry matter basis. Sensory properties of sprouted barnyard millet and red rice and amaranth seed flour cupcakes such as specific volume appearance, colour, taste, texture and flavour were evaluated and found excellent.

Keywords: Barnyard Millet, Red Rice, Amaranth Seed, Sensory Evaluation; Nutrient and Mineral Composition.

DEVELOPMENT OF UNDER ARM PAD WITH BRIGHTENING AND ODOUR ACTIVITIES BY USING CASSIA AURICULATA FOR UNISEX

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Abstract

Excessive sweating is a condition that is experienced by approximately 1% of our population. There are different types of this condition, with some people sweating heavily from specific parts of their body, while others may sweat from no specific area. There is a real stigma in society today related to underarm sweat, with a wrongly held belief being that there is a link between sweaty underarms and bad hygiene. Arm pads are cotton pads that stick to your skin or clothing to absorb excess sweat. Some underarm sweat pads can handle more than one use. For example, dress shields, garment guards and garment shields are washable, reusable shields that attach to your clothing. Cassia auriculata is a common plant in Asia, profoundly used in Ayurvedic medicine as a tonic, astringent and as a remedy for diabetes, conjunctivitis and ophthalmia. *Cassia auriculata* L. commonly known as tanner's cassia, also known as "avaram" in the Tamil language is a shrub that belongs to the Caesalpiniaceae family. The shrub is especially famous for its attractive yellow flowers which are used in the treatment of skin disorders and body odour. The objective of this study is to analyse the properties of *avarampoo* and develop underarm pads for unisex with brightening and odour activities.

Sustainable approach on development of ecofriendly antimicrobial finished fabric using Prodigiosin of *Serratia marcescens* MTCC 8708

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Abstract

Textile is one of the largest industrial sectors that play a significant role in the Indian economy. Synthetic dyes are coloured compounds widely used in textile industries for colouring fabrics. Many synthetic dyes, including azo dyes used in textiles, are derived from coal or petroleum-based compounds. These compounds are unsustainable, non-renewable, and non-degradable that have a negative impact on biotic and abiotic ecosystems. In addition, growing concern towards the teratogenicity and carcinogenicity of synthetic dyes and microbial pigments have renowned recent attention for textile applications. *Serratia marcescens* are an eco-friendly and non-toxic bacteria, and thus chosen for pigment production. It produces a pigment known as prodigiosin, a tripyrrole, red-coloured, non-diffusible, and hydrophobic compound. The microbial growth on textile materials during use and storage affects the durability and wearer. It could be controlled by incorporating antimicrobials into the textile material. Besides colouring properties, prodigiosin is found to exhibit antimicrobial properties. Hence an attempt was made to use prodigiosin as an alternative to synthetic dyes for the development of eco-friendly fabric imbued with antimicrobial properties. Based on the optimization of growth parameters, it was observed that Yeast malt extract medium supplemented with 0.5% NaCl and 1% mannitol at pH of 7, a temperature of 24°C and a growth time of 72 hours resulted in a maximum yield of prodigiosin. Further, prodigiosin was characterized and identified by chromatographic and spectroscopic studies. An R_f of 0.89, an absorption spectrum of 534 nm, a molecular weight of 322 D m/z, functional groups obtained in the FTIR spectrum and chemical shifts in NMR conferred that the extracted pigment could be prodigiosin. The purity of prodigiosin was determined as 81.13%. The antimicrobial activity, minimum inhibitory concentration, and minimum bactericidal concentration of prodigiosin was evaluated against various microbial pathogens. Prodigiosin exhibited prominent antimicrobial activity against *Staphylococcus aureus* and

was found to have MIC of 62.50 µg/mL and MBC of 250 µg/mL. Moreover, the synergistic effect of prodigiosin with streptomycin was determined. It was observed to have an antagonist effect with an FIC value of 4.50, which confers the ability of prodigiosin alone to act as a significant antimicrobial compound. Additionally, prodigiosin was coated onto cotton fabric and their physical parameters were assessed. It was found that prodigiosin-coated cotton has improved tensile strength, elongation, abrasion, crease recovery, stiffness, thickness, tearing strength, and bursting properties than control. The qualitative and quantitative assessment of prodigiosin coated was done and observed to have a significant bactericidal effect on *Staphylococcus aureus*. The biodegradation ability of prodigiosin coated fabric was determined in soil burial assay and it showed enhanced degradation than the control. Overall, studies suggested that prodigiosin showed remarkable colouring properties with antimicrobial potential and thus, prodigiosin could be effectively used for textile applications.

Keywords: Microbial Pigment, Prodigiosin, *Serratia marcescens*, Antimicrobial activity, Antimicrobial textiles

IDENTIFICATION OF PREDICTOR METABOLITES AND PATHWAYS FOR ANGIOTENSIN-II AND FRUCTOSE INDUCED CARDIAC REMODELLING

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Abstract

Cardiac hypertrophy (CH) characterized by enlarged ventricular walls and arrhythmias leads to heart failure (HF) and sudden cardiac death (SCD). The identification of predictors and highly influential pathways for the seven crucial clinical indicators of the metabolic and physiological alterations in CH, namely ECG parameters (QRS complex, R-amplitude, R-R interval, heart rate), 3-hydroxybutyrate (3-HB), lactic acid (LA) and urea can aid in better understanding and forecasting CH. Male Sprague Dawley rats (n=5) were divided into normal; angiotensin-II (ANG - 200 µg/kg, i.p) and fructose (FRC - 100 mg/kg/day, oral) groups for 2 weeks. Electrocardiography (ECG), heart weight/body weight ratio (HW/BW), hematoxylin and eosin (H&E) staining of

ventricles, serum metabolite screening using gas chromatography-mass spectrometry (GC-MS), correlation, multiple regression analyses and metabolite set enrichment analysis (MSEA) were performed to identify the significant predictor metabolites and pathways. ECG, HW/BW and histopathological analysis revealed the presence of CH-associated impairments. GC-MS revealed the metabolite shifts among ANG and FRC-induced CH. Correlation and regression identified oleic acid, caproic acid and mannose as the significant predictors for ANG whereas isoleucine, arabinonic acid and inositol were for FRC models. β -oxidation of very long chain fatty acids and phosphatidylinositol phosphate metabolic pathways were highly impacted by the above predictors in ANG and FRC models, respectively. This study fundamentally illustrated the metabolite shifts, influential pathways and the significant metabolites that can serve as predictors of ventricular dysfunction. This can be extended using machine-learning algorithms towards artificial intelligence-driven tracking and forecast of CH.

Keywords: cardiac hypertrophy, GC-MS, metabolites, correlation, regression, predictor

ASSESSING THE NUTRITIONAL STATUS AND FATIGUE OF NON-ALCOHOLIC FATTY LIVER PATIENTS

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Abstract

Non-alcoholic fatty liver disease (NAFLD) is a condition characterized by abnormal fat accumulation in the liver without a history of significant alcohol consumption. Fatty liver is a reversible metabolism disorder, resulting in an accumulation of triglycerides within the hepatocytes. The most common cause of fatty liver is obesity and it also associates with a more severe presentation, a higher risk for advanced liver disease, and liver cancer. The prevalence of NAFLD is higher in obese persons (60%-95%). Recent research says that there is no standardized pharmacological treatment, and the only proven effective therapeutic strategy is lifestyle modification, therefore it is important to determine the nutritional status for the prevention and treatment of NAFLD. In this study, we have analyzed the relationship between nutritional status, and Fatigue among 70 participants from September 2022 to October 2022 using SGA (Subjective

Global Assessment) and Modified Fatigue Impact Scale (MFIS). A total of 70 eligible participants were involved in this study, with a mean age of 48.7 ± 12.7 years an average weight of 74.3 ± 16.8 , and a BMI of 28.4 ± 7.1 . 24.2% of patients were overweight and 41.4% were obese. During SGA (Subjective Global Assessment) Nutritional assessment 23 % of patients had weight loss $>5\%$, 61.4% maintained the weight; among these 75% were well nourished, and 24.2% were malnourished. During Fatigue Scoring 24.2% had mild fatigue, 51.4% had Moderate Fatigue and 25.7% had Severe Fatigue. The results show that obesity is the major contributing factor to NAFLD which is associated with fatigue.

Evaluation of free radical scavenging activity of hydroethanolic leaf extract of *Sesbania bispinosa*

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Abstract

Free radicals are produced as a result of a variety of metabolic processes, and their excessive generation causes a variety of disorders. As a result, excess free radicals must be neutralised. The present study aimed to investigate the in vitro free radical scavenging activity of the leaf of *Sesbania bispinosa*. Standard methods were used to assess the free-radical scavenging activity of *S. bispinosa* extracts. The plant *S. bispinosa* has a high DPPH, Hydroxyl radical, and Nitric oxide scavenging activity. The plant's resistance to free radicals was assessed using a reducing potential assay. It can be inferred that the plant effectively scavenges free radicals. It is concluded that the hydroethanolic leaf extract of *S. bispinosa* can be used as a possible source of antioxidants and as a therapeutic agent in free radical-induced disorders. according to the findings. Isolation and characterisation of the active antioxidants, which could serve as a potential supply of natural antioxidants, would require more research.

Keywords: Free radicals; *Sesbania bispinosa*; Scavenging activity

Anthropometric and dietary intake of rural perimenopausal women

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Abstract

Midst the numerous aspects of health promotion, well-being and lifestyle adaptation towards the menopausal period, nutritional habits are essential because they concern all women and can be modified, and impact both longevity and quality of life. The purpose of this community-based health study was to examine the relationship between anthropometric measures, socio-economic status, and dietary habits among rural perimenopausal women. The present study includes 400 subjects residing in the rural area of Coimbatore. A pre-designed questionnaire was used to collect the data on socio-demographics, and anthropometric measures such as body weight, height, body mass index, waist-hip circumference, and dietary intake through 24-hour diet recall. Nutrition education was provided to all the subjects. The mean age of the selected perimenopausal women was 51.2 years. Among the study subjects, 37% were overweight and 35% were obese. It was awful that only 5% of participating perimenopausal women underwent physical activity regularly. Compared with recommended dietary allowances, the average intake of protein (48 ± 13 g), fibre (10 ± 3.2 g), calcium (352 ± 141 mg) and iron (10.58 ± 2.5 mg) were found to be deficit whereas the intake of calories (1905 ± 110 kcal) and fat (34 ± 12 g) were found to be excess. A well-structured nutrition education intervention was conducted for all the subjects on healthy food choices and the importance of physical activity. The food habits of the participants reveal a lack of knowledge of nutrition needs and recommendations, which results in the consumption of food with a lack of balanced nutrients. Health education with dietary guidance and intensive resistance exercise interventions can optimize the body composition of perimenopausal women, which is worthy of further promotion to a better quality of life.

Keywords: Anthropometry, Dietary habits, Health education, Perimenopause, Physical activity

NANOTECHNOLOGY IN THE TEXTILE INDUSTRY

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Abstract

Nanotechnology is a growing interdisciplinary technology often seen as a new industrial revolution. Nanotechnology (NT) deals with materials 1 to 100 nm in length. Increasing customer demand for durable and functional apparel manufactured sustainably has created an opportunity for nanomaterials to be integrated into textile substrates. This review also provides an analysis of nanotechnology consolidation in the textiles market to evaluate global trends and patent coverage, supplemented by case studies of commercial products. Nanotechnology has versatile applications in the Textile Chemicals industry in manufacturing garments with stain resistance, flame retardant finishes, wrinkle resistance finishes, moisture management, antimicrobial qualities, UV protection, and soil release properties. Incorporating nanomaterials into a textile can affect a host of properties, including shrinkage, strength, electrical conductivity and flammability. Nanotechnology has also made a tremendous impact on functionality and performance. Nano-treated textiles may lead to many inventions as science develops in future. The focus of this paper is to summarize recent applications of NT as they relate to textile fibres, yarns, and fabrics. This study reviewed the main approaches available to process nanofibers and discuss characteristics relevant to textile and apparel applications.

THE FINISHING OF BAMBOO FABRIC WITH CABBAGE LEAVES EXTRACT FOR SKIN INFECTIONS

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Abstract

Bamboo cloth treated with cabbage leaf extract is intended for use in treating skin ailments. Because both bamboo fabric and cabbage leaf extract have high antibacterial,

air permeability, and water absorption effects naturally, finished fabrics made with cabbage leaf extract can be used to treat acne, pimples, age spots, and wrinkles, as well as breast enlargement, skin cancer, sun damage, and other skin allergies. Bamboo fabric is a sustainable alternative to synthetic fibres. It has qualities like softness, allergy reduction, temperature regulation, UV protection and breathability, and is primarily biodegradable. Skin infections are brought on by the growth of bacteria, viruses, yeast, fungi, or other microorganisms. Infections can spread throughout the body. Medical textiles are essential for infection management and prevention. Healthcare textile provides us with affordable means of shielding hospital staff members and patients from germs like bacteria and viruses. The high-performance fibres used to create the healthcare textile were intended to stop the growth of dangerous microorganisms. Secondly, it will find use in the area of personal hygiene where the development of harmful bacteria can be harmful to one's health. A medical textile must meet several key aspects, including biocompatibility, lack of allergenic reaction, absorbency, non-toxicity, strength, elasticity, durability, anti-static property, and, to some extent, biodegradability and biostability. The required set of features may vary depending on the end user.

Keyword: Bamboo fabric, skin infection, extract of cabbage leaves.

Knowledge of Leather Alternatives: An Explanatory Study Towards Vegan Leather: Implication for Education

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Abstract

Specialty fabrics are a combination with many beneficial properties in textile and in polymer; the textile component provides tensile strength, tearing strength and elongation control, the method of coating offers protection against the hazards in the environment to which the fabric is subjected. Artificial or special textiles have established themselves as one of the important products in the textile global market. Artificial leather looks and feels like natural leather, but is made on a Fabric base rather than from animal skin. The fabric, due to its leather-like finish, acts as a substitute for leather and is fast replacing it in many industries such as footwear, upholstery, and automobile.

Keywords: artificial leather, coating, nonwovens, textiles.

**SINGLE JERSEY KNIT FABRICS MADE OF 100% MODAL AND
BLENDS OF MODAL AND COTTON: A STUDY ON THE
THERMAL CHARACTERISTICS**

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Abstract

Fabric development using Modal yarns offers thermal comfort. The linear density of 100% Modal yarns is the same as that of 50:50 Modal and Cotton yarns. From each of the produced yarns, single-jersey knitwear, single-pique knitwear, and honeycomb knitwear were produced. The results for water vapour permeability of the textiles are noteworthy, according to statistical analysis. A wicking test was also carried out to determine how much water the Cloth absorbs. The thermal conductivity of the textiles was shown to decrease when the quantity of Modal fibre was increased. The water vapour permeability and wicking of the textiles increased as the as Modal fibre percentage increased.

Keywords: Modal fibre, Water Vapour permeability, wicking, Thermal conductivity

A STUDY ON EPIPREMNUM AUREUM AND ITS EFFICACY

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Abstract

emum aureum is species of plant in the family of aureum. It has been found that fibre can be extracted from the plant *E. aura* through natural retting process. Retting is a process employing the action of micro-organisms and moisture on the plant to dissolve or rot away much of the cellular tissues and pectin surrounding the best fibre bundle and so facilitating separation of the fibre from the stem. After the extraction, the physical and chemical properties of the fibre are analyzed. Then the fiber is mixed with cotton and

converted into a non-woven fabric by needle punching method. The web for needle pusher nonwoven is made with the help of dry-laid technology chiefly by carding technique. Then it is needle punched with the needle punching machine. Then the non-woven fabric of aureum fibre is given for the antibacterial, antifungal and antitermite test. The performance of antimicrobial susceptibility testing is significant to bacterial isolates. The goals of testing are to detect possible drug resistance in common pathogens and to assure susceptibility to drugs of choice for a particular infection. The antimicrobial activity of plant extracts and phytochemicals was evaluated with antibiotic-susceptible and resistant microorganisms. In addition, the possible harmonious effects when associated with antibiotics were studied. The Indian white termite, *Odontotermes obesus* Rambur is a highly destructive polyphagous insect pest, that lives in huge mounds and feeds on cellulose material and almost anything which contains carbohydrates. It causes economic damage to commercial wood, fibres, cellulose, sheets, papers, clothes, woollens, mats and woody building materials and infests green standing foliage and cereals stored in godown. It has been analyzed and proven that antibacterial properties, antimicrobial properties and anti-termite properties are present in the *Epipremnum aureum* fibre.

Keywords: Epipremnum Aureum, antibacterial test, antifungal test, antitermite test, Cotton.

A COMPARITIVE STUDY ON MODAL KNIT FABRIC OF FRAGRANCE FINISH USING SPRAY METHOD AND PADDING MANGLE METHOD

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Abstract

New textile technologies have increased the application of cosmetic ingredients on fabric to provide its functional benefit to the end-use product and therefore, cosmetic textiles are moving from research to the stage of commercialisation. Fragrance finish is one such finish that falls under this category. Aromachology refers to science that studies the effects of fragrances on the human body and mind. It researches how scents can be

used to induce relaxation and make life more pleasant for peoples. Finish was prepared and applied by two methods, Spray and Padding Mangle methods. Tests were conducted to check the performance properties of fragrance finish and the effect of finish on physical properties and mechanical properties of the fabric for unwashed samples were tested. And finally comparative study of both the finish methods were analysed and calculated.

Keywords: Modal fabric, knitted, fragrance finish, citronella oil, Spraying, Dip and dry method.

Influence of Zirconium oxide nanoparticles toxicity on zebrafish - A correlation investigation between the behavioural endpoints and oxidative stress response.

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Abstract

The advancement of reliable whole animal-based research assays to assess the possible toxicity of engineered nanoparticles is crucial. In this study, the chronic effect of zirconium oxide nanoparticles exposure in zebrafish on behaviour and alterations in biochemical responses were analysed. For our study two varying concentrations were used (low dose (0.5ppm) and high dose (2.5ppm)). After two weeks of exposure to zirconium oxide nanoparticles, behavioural experiments were determined. At the end of the experimental period, it was observed that there was a reduction in locomotion, exploration, mirror biting and shoaling function deficiency by the zebra fish. Biochemical results suggest that zirconium oxide nanoparticles exposure significantly increased the activity of superoxide dismutase and catalase in the brain of zebra fish with increased concentration of reactive oxygen species. This investigation is the first attempt to demonstrate the toxicity in zebrafish on behavioural parameters following exposure to zirconium oxide nanoparticles at optimal environmental concentration.

Keywords: Zebrafish, Zirconium oxide nanoparticles, toxicity, behavioural endpoints, oxidative stress

Formulation and quality evaluation of health mix with horse gram, black rice and moringa leaves

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Abstract

Horse gram, (*Macrotyloma uniflorum*) known as poor man's pulse is rich in calcium, iron, and protein rather than other legumes. As its numerous biological activities, including anti-diabetic, analgesics, anticalcifying, anti-hypercholesterolemic, anti-obesity, anthelmintic, antioxidant, larvicidal and anorectic properties have already been recognized, the present study was conducted with the aim to develop nutrient enriched product to combat macro and micronutrient deficiencies. The developed health mix was ready to consume with hot water or milk. The product was formulated using ground horse gram and black rice under three variations as V1 (70:30), V2 (60:40), V3 (50:50) with dried moringa leaves powder. Sensory evaluation was done using trained panel members and it was evident that V1 scored high in all the parameters like appearance (4.6±0.61), flavour (4.5±0.52), texture (4.4±0.67), taste (4.6±0.72), and overall acceptability (4.6±0.80) compared with V2 and V3. The moisture and ash content of variation-1 was 10.3g and 5.93g respectively. The DPPH assay of the product was found to be 51.3% with total phenolic compound 106.1mg. The nutrient analysis revealed that the developed health mix comprised energy 345.74 kcals, carbohydrates 59.37g, protein 23.4g, fat 1.03g, fiber 5.24g, iron 10.2mg, and calcium 343mg. No bacterial growth was found without any preservatives after 90 days, hence the product was safe for consumption. The developed health mix was found to be nutrient enriched and cost effective when compared to commercial health mix products in the market. The regular intake of the developed product with horse gram and moringa leaves were found to be highly nutritious with great source of antioxidants and phenolic compounds, which will provide an efficacy

on nutrient deficiencies.

Keywords: Black rice, Health mix, Horse gram, *Moringa oleifera*, Nutrients

Neuroprotective effects of berberine chloride against the aluminium chloride-induced Alzheimer's disease in zebrafish larvae

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Abstract

Alzheimer's disease (AD) is a long-term neurodegenerative disease distinguished by cognitive and memory deficits. A lack of cognition, memory and other forms of cognitive dissonance characterize AD, which affects about 50 million people worldwide. The current investigation aimed to identify the protective effects of berberine chloride against aluminium chloride (AlCl₃) induced AD in zebrafish larvae by inhibiting oxidative stress and neuroinflammation. Zebrafish larvae three days post-fertilization (dpf) were exposed to 150 µM of AlCl₃ for three days while being treated with 150 and 300 µM of berberine chloride. After berberine treatment, a series of behavioural tests and biochemical parameters were analyzed and measured. Our findings indicate that the biochemical and behavioural features of AlCl₃ larvae were aberrant. AlCl₃ larvae exhibited altered motor function, and pro-inflammatory mediator expression was markedly up-regulated. Interestingly, the biochemical and behavioural abnormalities caused by AlCl₃ in zebrafish larvae were significantly reduced by berberine treatment. From our findings, it is suggested that berberine may be a helpful treatment drug for reducing neuroinflammation in AD.

Keywords: Berberine chloride, AlCl₃, oxidative stress, neuroinflammation and apoptosis

**Antioxidant and anti-inflammatory activities in hexane leaf extract of
Mitrephora heyneana – An *in vitro* approach**

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Abstract

Medicinal plants are regarded as rich resources of antioxidants. Antioxidants can prevent or slow damage to cells caused by free radicals. Factors that increase the production of free radicals in the body can be internal, such as inflammation, or external. Certain plant-based foods are thought to be rich in antioxidants. *Mitrephora heyneana*, a plant species from Annonaceae, consists of sterols, triterpenoids and coumarins as major secondary metabolites. The plant leaves were extracted with hexane and used for evaluations of various *in vitro* antioxidant assays, including enzymatic, free radical scavenging, total antioxidant assays and anti-inflammatory assays. Ascorbic acid was used as the standard for antioxidant assays followed by diclofenac for anti-inflammatory. In the catalase enzymatic assay the percentage of inhibition was high (57.63 ± 3.33 $\mu\text{g/mL}$) with IC_{50} of 32.93 ± 2.14 $\mu\text{g/mL}$ when compared to the standard (56.43 ± 2.47 $\mu\text{g/mL}$) IC_{50} of 36.84 ± 1.22 $\mu\text{g/mL}$. Free radical scavenged through Hydrogen peroxide (H_2O_2) inhibition (57.34 ± 0.77 $\mu\text{g/mL}$) IC_{50} of 66.68 ± 8.71 $\mu\text{g/mL}$ was relatively equal to standard (60.31 ± 0.81 $\mu\text{g/mL}$) IC_{50} of 67.95 ± 6.34 $\mu\text{g/mL}$ and total antioxidant was high. The extracts also exhibited a decrease in serum albumin (BSA) denaturation and showed significant inhibition of inflammation. This study indicates the presence of potential sources of antioxidants from nature which can be further used as an excellent pharmaceutical product as a natural antioxidant and anti-inflammatory agent.

Keywords: *Mitrephora heyneana*, antioxidant, free radical scavenging, H_2O_2 , anti-inflammatory.

**ANTIPILEPTIC EFFICACY OF BERBERINE IN
PENTYLENETETRAZOL (PTZ) INDUCED ZEBRAFISH LARVAE**

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Abstract

Epilepsy is a chronic brain disorder characterized by an enduring predisposition to generate recurrent unprovoked seizures. There has been an increase in preclinical research in identifying and developing innovative treatment candidates for epilepsy due to the absence of disease-modifying pharmaceutical approaches to treat epileptic seizures. The potential benefits of plant-based chemicals for treating neurological conditions, such as epilepsy, have drawn much attention. In this study, we have investigated berberine (BB) on pentylenetetrazol (PTZ) induced epileptic seizures in zebrafish. Our results exhibited that BB pretreatment significantly reduced seizure-like behavior and delayed the onset of seizures. However, pretreatment with BB altered the PTZ-induced downregulation of the relative enzyme activity of CAT, GPx, and SOD. Therefore, our results conclude that BB pretreatment reduces PTZ-induced seizures, inhibiting apoptosis and controlling the inflammatory and oxidative stress responses, which might protect zebrafish against seizures.

Keywords: Berberine, PTZ, epilepsy, seizures, oxidative stress, and neuroinflammation

**GCMS Analysis of Methanolic Extract of *Artabotrys hexapetalus* (L.f.)
Bhandari Leaves**

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Abstract

The main objective of this research was to identify the bioactive compounds

present in the methanolic leaves extract of *Artabotrys hexapetalus* (L.f.) Bhandari using GCMS. *Artabotrys hexapetalus* belongs to annonaceae family. Phytochemical analysis of *Artabotrys hexapetalus* leaves revealed the presence of different phytoconstituents like alkaloids, flavonoids, tannins, phenols, glycosides, saponins and terpenes. GCMS analysis of the methanolic leaves extract of *Artabotrys hexapetalus* revealed 30 compounds. Some important compounds include (a) n-Hexadecanoic acid (b) Caryophyllene (c) alpha.-Cubebene (d) 4H-Pyran-4-one, 2,3-dihydro-3,5-dihydroxy-6-methyl- (e) gamma-Sitosterol (f) Methyl .beta.-d-galactopyranoside and (g) Phytol. These biologically active compounds that are found in *Artabotrys hexapetalus* (L.f.) Bhandari possesses pharmacological properties can be used as a therapeutic agent.

Keywords: *Artabotrys hexapetalus* leaves, GCMS, Phytochemicals, Bioactive compounds.

Renal Clearable Theranostic NIR-II Responsive Immune Nanomedicine for Targeted Photothermal Immunotherapy against Heterogenic Tumor Microenvironment

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Abstract

The ultimate goal is to meet successful cancer therapy, which is not only treating the primary tumor but also preventing metastatic tumors, therefore the concept of combining photothermal therapy (PTT) with immunotherapy is of great interest. Presently, the treatment of Triple-negative breast cancer (TNBC) is more challenging due to the lack of clinical markers for molecularly targeted therapies. Therefore, developing a new nanotherapeutic approach of targeted combinational therapy could be an effective alternative nano-strategy. Hence, we designed a combination of NIR-II responsive renal clearable ultrasmall copper sulfide (CuS) particles conjugated TAT peptides decorated hyaluronan (HA) and co-encapsulated with ICG/R848 denoted as CuS-TAT-ICG/R848-HA nanocomposite (NC) that exhibited an adequate photothermal conversion efficiency (PCE) that is highly beneficial for selective CD44-mediated photothermal ablation of TNBC tumors. Furthermore, co-encapsulation of ICG/R848 (immune adjuvant)

molecules also triggers an improving photothermal response against the tumor and activation of TLR7/8a agonist R848 for antitumor immune response. The formed CD44-targeted NC selectivity incinerates the CuS-TAT mediated nuclear-targeted tumor cells. With a 1064 nm laser leads to effective photothermal ablation towards specific tumor cells. Concurrently, NIR-II responsive photothermal effects further elicit effective antitumor immunity by inducing ICD at tumor tissues, wherein dying tumor cells release distress signals of damage-associated molecular patterns (DAMPs). The co-presence of R848 and CuS causes dendritic cells maturation (DCs) to stimulate cytotoxic T-cell activations, which promote an immune response. Thus, the NIR-II-activated photothermal ablation combined with anti-programmed death-ligand 1 (aPD-L1) immunotherapy is a promising therapeutic platform for effective targeted immunotherapy and had great potential for cancer therapy.

Keywords: photothermal therapy, hyaluronan, nanocomposite, combinational therapy, targeted immunotherapy

A SURVEY ON AWARENESS TOWARDS COMMERCIAL SANITARY NAPKINS AND ACCEPTANCE TOWARDS ECO- FRIENDLY SANITARY NAPKIN

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Abstract

Menstruation is a natural and normal process that occurs in girls and women of reproductive age every month when the uterus begins to lose blood and tissues via the vaginal canal in preparation for pregnancy. Sanitary napkins are technical textile products that are used by women during menstruation to collect menstrual fluids hygienically. Commercially accessible menstrual hygiene pads are made of what may initially appear to be harmless material, but they include dioxins, petrochemicals, artificial perfumes, and other harmful substances. When the external skin of the vagina is irritated by a layer of pad, these chemicals can result in contact dermatitis. The usage of SAP-petrolatum also

has some negative health impacts because prolonged exposure might result in serious side effects like cervical cancer and abnormal uterine growth. The study was conducted among 300 women around various parts of India aged between 15 to 45 years. In the first part of the survey, the problems in existing commercial sanitary napkins, napkin usage habits, Sanitary napkin preference and the features to be added to sanitary napkins were questioned and data was gathered in order to build a unique/functional sanitary napkin. Additionally, consumption patterns and the results of product marketing were examined in order to tell the companies operating in the field about current preferences for sanitary napkins. Consequently, it was determined that women focused on free from cancer-causing agents, odourless and soft surfaced, sanitary napkins in addition to the absorption properties such as leak proofing and dryness. The most frequent problems in current pads were leakage, odour and the need for frequent changes. In parallel, antibacterial activity was the most requested requirement in a new sanitary product.

Keywords: - technical textile, sanitary napkin, survey, problems, preference

Target Specific Tumor Seeking Nanomedicine for Triple-Therapeutic Effects

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Abstract

Triple-negative breast cancer (TNBC) is a breast cancer subtype. Presently, TNBC patients do not have approved targeted therapy. Therefore, patients primarily depend on forceful systemic chemotherapy that has unavoidable harmful side effects and shows inadequate therapeutic outcomes leading to a high mortality rate. Hence, there is an urgent need to develop targeted therapies for the TNBC populace. Developing a new nanotherapeutics approach to combinational therapy could be an effective alternative strategy. Therefore, we designed a combination of hyaluronan-polyaniline-imiquimod (R837) named as HA-PANi/R837 NPs exhibited a high extinction coefficient and adequate photothermal conversion efficiency (PCE) made it an efficient photothermal agent (PTA), which is highly beneficial for selective CD44-mediated photothermal

ablation of TNBC tumor. Furthermore, co-encapsulation of R837 (Toll-like receptor 7 agonists) immunoadjuvant molecules to trigger an immune response against the tumor. The formed CD-44 targeted HA-PANi/R837 NPs selectivity incinerates the tumor under NIR-triggered photothermal ablation, generating tumor-associated antigens and also triggers R837 combination with anti-CTLA4 for the immunogenic cell death (ICD) activation to kill the remaining tumor cells in mice to protect tumor relapse and metastasis. Our results demonstrated that novel HA-PANi/R837 NPs induced photothermal ICD achieved in CD44-targeted TNBC is a promising application.

Keywords: Polyaniline, Hyaluronan, Near-infrared, Photothermal therapy, Immunotherapy, Triple-negative breast cancer

Assessment of Nutritional Knowledge about Anganwadi Workers is Kallal Block in Sivagangai District

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Abstract

Anganwadi Centre (AWC) provides integrated Services Comprising Supplementary Nutrition, Breast Feeding, Immunization Health Check-ups, Pre –School Education & Nutrition Education, It is a Childcare Centre Located within the village or the slum. The Anganwadi Workers is the Community Based Voluntary Frontline worker of the ICDS Programme. She Assumes a Pivotal role due to her close & Continuous contact with beneficiaries Her Educational Level & Knowledge of Nutritional play an important role related to her performance in the Anganwadi Centre. The major content of the interview Schedule were Socio-Economic & Demographic Profiles of AWWS, knowledge about various ICDS Services like Nutritional, breastfeeding and health education, Immunization, Supplementary Nutrition, Growth Monitoring and problem faced by AWWS While Implementing ICDS Programmes. The Majority of Ninety Six Anganwadi workers know the use of first aid and medical kit, Hundred Percentage of Anganwadi Worker using the Baby Weights Scale. Eighty-three Percentage of those

using the Adolescent Weight Scale Eighty Two Percentage of Anganwadi Workers had Krishorishakti yojana Scheme, Seventy-five Percentage of Anganwadi Workers know the complementary good, there is only seventy-three per cent of Anganwadi workers know the noon meal programme, nine Percentage of Anganwadi worker knowing menstrual Hygienic Practices Anganwadi workers having anaemia knowledge sixty-two percentage of Anganwadi worker Seventy Percentage of AW were aware of colostrums knowledge of Kallal Block.

Keywords : Anganwadi Worker (AW) Supplementary Nutrition, Nutrition Knowledge.

EVALUATION OF PHYTOCHEMICAL CONSTITUENTS OF *EUPHORBIA CYATHOPHORA* LEAF EXTRACTS

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Abstract

The annual herb *Euphorbia cyathophora* is used for various therapeutic activities. The present investigation was conducted to evaluate the phytochemical constituents of different polarities of solvent leaf extracts of *E. cyathophora*. The leaves of *Euphorbia cyathophora* were extracted with chloroform, acetone, and methanol by the hot extraction method through the soxhlet apparatus. Qualitative phytochemical screening analysis was carried out to identify the presence of major components. The preliminary phytochemical screening of various solvent leaf extracts of *E. cyathophora* showed the presence of numerous bioactive chemical components such as alkaloids, flavonoids, sterols, terpenoids, anthraquinones, carbohydrates, and volatile oils. The phytoconstituents anthocyanin, protein, phenolic, quinones, tannin, saponins, phytates, cardiac glycosides, glycoside test, lignin, and coumarins are absent in all the tested extracts. The alkaloids, flavonoids, and carbohydrates were present in all the leaf extracts. The sterols were present in the leaf extracts of chloroform and methanol except for acetone. The terpenoids and anthraquinone have only occurred in acetone extract. Additionally, volatile oils were present in chloroform and acetone but absent in methanol extracts. In conclusion, the present study revealed that the leaf extract of *Euphorbia cyathophora* had significant

secondary metabolites. Further investigation is required for the development of *in vitro* antimicrobial screening of medically important pathogens and agricultural insect pest management of *Earias vittella*.

Keywords: Phytochemical screening, *Euphorbia cyathophora*, chloroform, acetone, and methanol.

Extraction, optimization, and characterization of polyhydroxybutyrate produced by the *Halobacillus halophilus* strain (OM679383.1) using submerged fermentation

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Abstract

Halobacillus halophilus, a moderately halophilic bacterium, is an efficient biopolymer producer. Soil samples collected from a Puthalam salt works in Tamilnadu's Cape Comorin coastal region were used to isolate various halophilic bacterial isolates. Halobacterium sp. was isolated by using a halophilic isolation medium. It was characterised by both phenotypic and genotypic 16S rRNA sequencing, and a phylogenetic tree was used to reveal the similarity of the nucleotide databases. Polyhydroxybutyrate accumulation was screened by Sudan black staining and crotonic acid assay and it was extracted using a sodium hypochlorite process followed by a chloroform extraction technique. Optimization studies were carried out for the PHB production process under favourable conditions with the utilisation of nutritional factors in submerged fermentation mechanisms, which promoted PHB accumulation in those cultures that produced the highest levels of biomass at an incubation temperature of 37°C and a pH of 8. The best carbon source was glycerol at (1%) and the preferable nitrogen source was ammonium sulphate at (0.1%). When using these ideal conditions, there was a significant impact on the PHB accumulation, which increased from 6.32 g/l. And partial characterizations were done by TLC, UV, FTIR, and H1NMR spectroscopic studies.

Keywords: Characterization, Polyhydroxybutyrate, Biopolymer and Submerged fermentation.

Removal of contaminants from washing machine discharge using eco-friendly material

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Abstract

As the water demand is increasing day by day, cost-effective and chemical-free methods for water reuse/recycling have become the need of mankind. Various research and studies have recently aimed to develop safer purifying agents (from natural materials) as alternatives to artificial purifying agents. The present study focuses on the production of eco-friendly purifying agents from natural materials, *Strychnos potatorum* seeds (SPS) that can be safely used for wastewater treatment. The water treatment process refers to a series of processes that are important in clarifying turbid water. In the present work, physical and chemical parameters have been analyzed to determine the water quality for washing machine discharge and water treated by SPS. Physico-Chemical parameters like Turbidity, Total Dissolved Solids (TDS), Electrical Conductivity (EC), pH, Total Hardness, Sodium (Na), Potassium (K), Iron (Fe), Free Ammonia (NH₃), Nitrate (NO₃), Chloride (Cl), Sulphate (SO₄) were tested and the data obtained were compared with BIS standards. Our experimental findings strongly highlighted the ability of *S. potatorum* seeds to remove contaminants from wastewater.

Keywords: Wastewater treatment, *Strychnos potatorum*, Water quality analysis

AGRO TEXTILES – THE PEDESTAL

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Abstract

Agro textiles are used to classify the woven, nonwoven and knitted fabrics useful for agricultural & horticultural use. The textile resources generally produce by synthetics in a variety of decompositions, utilized in the form of moreover woven or nonwoven. The performance of textiles is also now broadened to preserve the agro products like plants, vegetables and fruits from weather, weed and birds, etc. Agriculture can engage in recreation by complementing the strengths of each other, to fabricate a new progression of the 'Agrotextiles' revolution. It also gives you multidimensional views and solutions to the troubles being faced by the agro industry, from the textile sector. "Textiles constantly keep up its style of exclusivity by creating enormous technological strides in all the fields ". This is the chance to change our environment with eco-friendly products in agriculture around the world. Agro products were made up of soil and environment friendly. Herewith textiles will prove that "Agriculture is the backbone of our country".

Targeted total soluble product recovery during food waste biomethanation for process control and circular economy

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Abstract

Biomethanation is an established method for food waste treatment and concomitant energy recovery as biogas. During the hydrolysis and acidogenesis phases of biomethanation, products such as alcohols, solvents, lactate, and fatty acids are formed. These intermediate products are collectively called as total soluble products (TSP). Maintaining optimal TSP concentration enhances process control and biomethane production. Since methane is produced from acetate, all long-chain fatty acids conversion

to acetic acid is favored. However, the accumulation of volatile fatty acids (VFA) causes acidification due to the kinetic imbalance between acid production and consumption rates. The most promising and cost-effective method for recovery of TSP, including VFA, is adsorption using polymeric ion-exchange resins such as amberlite, lewatit, purolite, amberlyst, and granular activated carbon. The VFAs are carboxylic acids that can be separated from fermentation broth using anion exchange resins. The carboxyl group has a negative charge that allows ionic bonding with a positively charged functional group on the anion exchange resin when unprotonated. Other ions are washed out using water. Purified VFAs are obtained from resins using extractants such as water or ethanol, followed by evaporation. The extracted VFAs, potential renewable carbon sources, are downstream processed to produce many value-added products. The VFAs are used in various biological processes, including the production of biodiesel, biodegradable polymers, and biohydrogen-based electricity from microbial fuel cells. Additionally, they have a wide range of applications as chemical precursors, food additives, pharmaceutical products, and cosmetics. Timely recovery of targeted TSP prevents acidification and provides optimal pH for methanogens, leading to enhanced biomethane production. Subsequently, a biorefinery can be developed from the TSP extracted during food waste biomethanation, generating a circular economy for a sustainable development.

Keywords: Food waste, Biomethanation, Volatile fatty acids, Polymeric ion-exchange resin, Biorefinery, Circular economy.

Concomitant dark fermentation and biomethanation of brewery-spent grains for biohydrogen production

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Abstract

Every year around 38.6×10^6 tons of brewery spent grains (BSG) is generated worldwide as a byproduct and waste from the whiskey distillery and brewery industries. This BSG is a highly polluting waste due to its high COD, BOD, ammonia, phosphorus, and complex organic matter (i.e., cellulose, lignin, yeast cells and proteins) content. Nevertheless, BSG can be used as a substrate to produce sustainable green energy sources

such as biomethane (55 KJ/g) and biohydrogen (143 KJ/g). However, the high C: N ratio of BSG resists bacterial growth during dark fermentation, which could be solved by co-digestion of BSG with other substrates with a low C: N ratios, such as food waste and sewage sludge. Furthermore, the blended mixture of biomethane and biohydrogen, known as biohythane, is gaining global attention because of its high combustion efficiency and environment-friendly nature due to the lower emission of CO₂ of 69 g km⁻¹. Biohythane is produced via a two-stage bioprocess of BSG, where biohydrogen is first produced through dark fermentation, followed by a biomethanation process for biomethane production. Volatile fatty acids (VFAs) produced from dark fermentation are used as the substrate for biomethanation. The generated biohydrogen and biomethane are collected separately and mixed in a ratio ranging from 10-30% H₂ to 70-90% CH₄ for biohythane production. Biohythane can curb the brewing industry's expensive energy demand, thereby contributing to the circular economy and sustainability. Hence, concomitant dark fermentation and biomethanation is an effective treatment strategy for converting highly recalcitrant BSG into biohythane and other value-added industrial products.

Keywords: Anaerobic digestion, Brewery spent grains, Methane, Hydrogen, Biohythane, Circular economy.

Potential drug target from breast milk *Lactobacillus* against vaginal pathogens

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Abstract

The term “Probiotics” refers to the micro-organisms that confer health benefits to hosts when administered in adequate amounts. In this work, *Lactobacillus*, isolated from breast milk of a 26 yr old women and was treated against vaginal pathogens at varying in different concentration (50µl, 40µl and 30µl). Identification of *Lactobacillus* was carried out by motility, gram staining and biochemical test. The antibacterial effects of the

Lactobacillus against vaginal pathogens were carried out by disc Agar diffusion method and Antibiotic sensitivity test was also analysed for the pathogens. The antimicrobial activity of the sample revealed that the *Lactobacillus* isolated from breast milk showed significant effectively against vaginal pathogens especially higher for *Klebsiella pneumonia*. GC-MS was carried out to identify bioactive compounds, followed by the identification of novel bioactive compounds in the corresponding fraction. The main aim is to assess the probiotic nature of *Lactobacillus* in preventing cervical pathogens by studying the effectiveness of antimicrobial activity against vaginal pathogens by identifying the effective compounds by GC-MS and they may widened up the panorama in research and may act as a promising natural human source based drug in medical field without taking any chemical drugs which cause side effects.

KEYWORDS: Probiotic, Vaginal pathogens, *Lactobacillus*, LMW compounds, GC-MS, Antimicrobial compounds

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Smart NIR-Responsive Targeted Cancer Theranostic Nano-immunomedicine for Tumor Cell Nuclear Ablation Induced Activation of Immune Response Against Heterogenic Tumor Microenvironment

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Abstract

Functionalized nanocomposites (NC) have proven to be an effective tool for modulating cell signalling pathways with fine spatial and temporal resolution. Optical stimuli, particularly near-infrared (NIR) light, are extremely advantageous because they may penetrate deeply into biological tissues with minimum attenuation and photodamage to cells. The major impediment to the translation of NC from basic research to clinical applications is the potential toxicity of clinical trials due to long-term body retention. Integrating renal-clearable and theranostic qualities into a single nanomedicine remains a big problem, especially when NC has optical absorption in the second (NIR-II) deep penetration biowindow with less tissue scattering. Photothermal therapy (PTT), which uses the hyperthermia produced by NIR-responsive photothermal agents (PTAs) that convert light irradiation to ablate tumors, has received a lot of attention due to its low

systemic toxicity, controllability, and noninvasiveness. Herein, developed synergetic facile and green preparation method of active NIR-I and NIR-II responsive functionalized NC polypyrrole (PPy) based-theranostic agent tethered hyaluronic acid (HA) with enhanced immune-activating drug resiquimod (R848) a synthetic Toll-like receptor 7 and 8 agonist (PPy-R848-HA) for targeting CD-44 receptor on overexpressed tumor. Therefore, prepared PPy-R848-HA NC compared with 808 and 1064 nm laser leads to complete tumor ablation together with a photothermal immune response. This novel strategy may provide another avenue for highly effective cancer theranostics.

Keywords: Polypyrrole, Resiquimod, Second near-infrared, Photothermal immunotherapy, cancer.

SYNTHESIS OF A LIPOSOMAL NANOCARRIER TO CURE HEMORRHOIDS

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Abstract

Haemorrhoids affect millions of people, and the condition worsens with age, making it a major medical and socioeconomic issue. To improve the solution for this problem there are a plethora of solutions which have been followed currently. This work discuss the cause and a curative solution for haemorrhoids. Firstly, using a batch of male Wister rats as the model they are induced with a hemorrhoid by a croton oil edema layer is formed in an anal-rectum region resulting in hemorrhoids. According to nanoscience smaller the size higher their efficiency so a curative medicine is then been given to with stand the sustainability of the medicine as nanocarrier is used. Liposomal nanocarrier act as a vehicle to take the medicine to the targeted site within short span of time compared with normal consumption of a tablet without a carrier. Liposomal nanocarrier helps in the transportation and also retain the medicine property for longer period of time. Didodecyldimethylammonium bromide (DDAB) ovine cholesterol with tocopherol PEG act as vehicle for drug delivery systems to enhance drug solubility and for a sustain release. Hydrocortisone is a main source which is been added with DDAB and PEG. After vigorous stirring, the final concentration of the resultant is a Hydrocortisone

liposome suspension. Samples were sonicated to produce the nanoliposomes. The nanoliposomes are then confirmed using characterization test Scanning transmission electron microscope, Energy-dispersive X-ray spectroscopy, X-ray diffraction, Scanning transmission X-ray microscopy. The improved experimental model of this study will result in the quick diagnostic way for curing hemorrhoids with the help of nanocarrier molecule.

Process optimization and kinetic modeling of ethanol production using *Saccharomyces cerevisiae*

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Abstract

Ethanol is widely used in industries and consumer products. It is used in medicine as an anti-infective agent, and commercial products containing ethanol include beverages, perfumes, medicinal liquids, mouthwashes and rubbing alcohols. In this study, the production process was designed using Central Composite Design (CCD), to produce ethanol from glucose using a wild strain of *Saccharomyces cerevisiae*. Batch fermentation was performed for 48 hours at 30°C for kinetic modeling, based on the Monod equation. Further, a rotary evaporator was used to recover ethanol at a temperature lower (50°C) than the boiling point of ethanol (78.3°C). Techno-economic analysis was also performed based on the experimental results. From the results, 1% inoculum and 3.2% glucose were the optimum conditions identified and validated for maximum ethanol production. Maximum specific growth rate (μ_{\max}) of 0.595 hr⁻¹, substrate saturation constant (k_s) of 6.65 mg/ml and 0.203 g/L of ethanol were obtained from this study. Economic analysis showed the major factors that contributed to the overall cost. Fermentation performances indicated that increasing the substrate concentration increases the product yield. Further, the study also gives a glimpse on the factors that could be addressed to make the process more economically feasible.

Keywords: *Ethanol, Central composite Design, Monod kinetics, economic analysis*

Optimization and production of extracellular laccase by *Bacillus sp.* isolated from soil

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Abstract

Laccase is a multicopper oxidase produced by various fungi, plants, and bacteria that has applications in dye degradation, textile industries, pollutant degradation, biosensor technology, food industries, and biorefineries. In this study, *Bacillus sp.* isolated from the soil sample was used to produce laccase using copper sulfate pentahydrate as an inducer with dextrose as substrate. Further, response surface methodology was applied to optimize the production media conditions to obtain maximum laccase activity. The obtained enzyme was partially purified using ammonium sulfate precipitation and dialysis. From the results, maximum activity was achieved with 0.003 mM inducer concentration and 96 hours of incubation time. The Monod parameters $K_s = 4.30$ g/L and $\mu_{max} = 0.005$ h⁻¹ were determined from batch growth kinetics. The overall biomass yield, product yield and the highest protein concentration obtained were 0.40 g/g, 0.11g/g and 1.04 g/L, respectively. Economic analysis was also performed for this study. This study for the first time suggests the feasibility of obtaining laccase from *Bacillus sp.* isolated from random soil samples with copper sulfate pentahydrate as an inducer.

Keywords: *Laccase, response surface methodology, Monod kinetics, inducer, techno-economic analysis*

Bioprocess Development and Techno-economic analysis of Lipase Production from *Pseudomonas aeruginosa* ATCC 9027

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Abstract

Lipases (EC 3.1.1.3) are serine hydrolases that catalyse the hydrolysis of long-chain triglycerides to fatty acids. Microbes are a valuable source of commercial lipase due to high catalytic activity, higher yield and constant supply. Bacterial lipases find application in detergent, food, flavour industry, bioremediation and cosmetics. The present study evaluates the potential of *Pseudomonas aeruginosa* ATCC 9027 in lipase production using olive oil. The optimal media composition for the production of lipase was found by response surface methodology. The study showed that the presence of additional carbon sources such as dextrose increased the lipase activity significantly. Further, the batch reaction was set up in a bioreactor with 1.5L working volume and kinetic studies were performed to estimate the Monod parameters. Subsequently, partial purification was performed by ammonium sulphate precipitation, followed by dialysis. The final purified lipase gave an activity of about 42U/mL. Additionally, a techno-economic analysis of the study was performed to analyse the commercial viability of the lipase produced. The results of the techno-economic analysis were compared with that of the commercial lipase to conclude the process feasibility.

Keywords: *Lipase, techno-economic analysis, Response surface methodology, kinetic study*

**FORMULATION AND SHELF-LIFE ASSESSMENT OF
WATERMELON (CITRULLUS LANATUS) SEEDS CHIKKI**

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Abstract

Food production and consumption generate a significant amount of processing waste, with fruit waste accounting for a large portion of it. Cucurbits with thick rinds, such as watermelon, musk melon, and pumpkin, produce a lot of waste during their consumption. However, using natural 'food waste,' such as seeds and peels, which are high in vital nutrients, is being promoted as a long-term solution to food insecurity. Watermelon seed is chosen for this study as it is the most discarded fruit seed. The procured watermelon seed is analysed for its proximate composition which is composed of good amounts of protein and fat (28.3g and 47.2g/100g). The watermelon seeds are used to formulate Chikkis in three different variations in which Variation – II has secured the highest mean score in organoleptic evaluation and it is chosen for the proximate analysis of Chikkis. The carbohydrate and protein content of the watermelon seed Chikkis contains 52.5g and 14.1g per 100g. Chikkis was packed in the air tight container and stored in the room temperature to evaluate moisture loss or gain for a period of 50 days. Overall, the results suggest that utilisation and consumption of watermelon seeds can promote and preserve health and the usage of watermelon seeds for consumption will be a step forward for the sustainable development to reduce food waste.

Retro Trends - Fashion is a circle

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Abstract

Fashion has often taken the past as inspiration to explore the conditions of innovation in contemporary fashion through a case study of retro understood as the revival either materially, immaterially, or literally of past trends in fashion. Because while fashion is generally defined by innovation and novelty, retro appears to counteract this basic premise and hence suggests that the very foundation of fashion may be changing.

Keywords: Retro, vintage, 80's and 90's, fashion.

A Study on Casein fiber for textile application

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Abstract

This case study presents the costumes worn by celebrities in real and reel life. Sometimes they create a trend and are fashion statements unto themselves. But have you ever wondered what happens to these outfits, once the movie has been shot? Do celebrities repeat their outfits? And where do they buy clothes? These questions have been in our heads for a long time. The importance of this case study is to know about celebrity wardrobes.

A Study on Forthcoming of Organic Fashion

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Abstract

It contributes a huge amount to economics, creates jobs and holds a significant influence over society and global supply chains. It is a huge opportunity for fashion to create change. Presently sustainability of fashion worldwide is a major considerable issue. Green textiles are fabrics or fibres produced to replace environmentally harmful textiles and minimize the ecological impact. Organic clothing may be composed of Cotton, Jute, Linen, Silk, Ramie and Wool. In the United States, textiles do not need to be 100% organic to use the organic label. Sustainable Fashion Reduces CO₂ & Other Greenhouse Gases Emission. For example, most fast fashion clothes are made from petroleum-based materials.

Keywords: Green fibre, Organic cotton, Textiles and Eco friendly.

A Study on Casein fibre for textile application

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Abstract

It is a new generation of innovative Fiber & a kind of synthetic Fiber made of milk casein Fiber through bio-engineering methods with biological health. The plentiful natural protein humectant factor is contained in the milk fibre, which makes skin more delicate and smoother, so it is suitable for household textiles. today's milk fibre is environmentally friendly, superior in strength and has far better qualities than man-made fibres.

Keywords: casein, milk, blend, new innovative

A STUDY ON RAINFOREST DESTRUCTION CAUSED BY TEXTILE

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Every year, thousands of hectares of endangered and ancient forests are cut down and replaced by plantations of trees used to make wood-based fabrics such as rayon, viscose, and modal. This loss of forest threatens the ecosystem and indigenous communities, as in Indonesia where large-scale deforestation of the rainforests has taken place over the past decade.

Keywords: Wood-based fabric, Rayon, Viscose, Modal, Deforestation.

A Study on Bio-plastics an eco-friendly alternative to petrochemical plastics

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Abstract

Plastics have varied applications and have become an essential part of our daily lives. The use of plastics has increased twenty-fold in the past half-century and is expected to double again in the next 20 years. To a global estimate, around 330 million tonnes of plastics are produced per annum. The production, use and disposal of plastics emerged as a persistent and potential environmental nuisance. The improper disposal of plastics ends up in our environment, resulting in the deaths of millions of animals annually and also the reduction in the fertility status of the soil. The bioplastics products are manufactured to be biodegradable with similar functionality to that of conventional

plastics, which has the potential to reduce the dependence on petrochemicals-based plastics and related environmental problems. The expansion and development of bioplastics and their products would lead to an increase in the sustainability of the environment and a reduction in the emission of greenhouse gases. The bioplastics innovation would be a key to the long-term solution for plastic pollution. However, widespread public awareness is also essential in effecting longer-term change against plastic pollution.

Keywords: Bioplastics; Biodegradable; Biobased; Biopolymers; Environment; Waste Management.

A STUDY ON THE VIABILITY OF MUSACEAE FIBER

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Abstract

With increasing developments and innovations in the world of fashion, there is a need for us to conserve the environment and look for sustainable eco-friendly fabric. Everyone knows the fruit Musa (Banana) but is not aware of its uses in the textile industry. Musa Paradisiaca Linn commonly known as banana is one of the most known and useful plants in the world and it belongs to the Musaceae family. Can we obtain fibre from a banana? What does it look like? How does it feel when we wear it? These questions will arise when hearing about banana fibres. Our country is blessed with millions of tons of Musa production every year and fibre is making its place in the fashion industry. Nowadays we experience a growing movement away from petrochemical-based fibres and synthetic fibres and back to natural fibres. This natural fibre is perfect as it is biodegradable and made from the stem of the banana trees i.e. Pseudo stem. Musa is not a recent innovation, people in Japan have been using this fibre since the 13th century and they make *kimono* and *kamishimo* dresses. Recently, it has been making a comeback in numerous industries and is used all over the world for multiple purposes like making apparel, handbags, footwear, vegan wallets, tea bags, and saris. Japanese yen notes are

also from Musa paper. With so many beneficial characteristics, Musa fibre is gaining popularity in the fashion industry and fashion designers are using Musa fabrics in their projects.

Keywords: Musa fibre, kimono dresses, synthetic fibres.

**DEVELOPMENT OF NANO SERICIN PARTICLES FOR
IMPROVING TEXTILE PERFORMANCE**

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Abstract

Silk proteins are natural proteins in silk cocoons. India is the second largest producer of silk. Sericin forms an integral part of the raw silk fibre covering it as a gummy substance – for the formation of a cocoon. In general, in India, approximately every year 3,000 tons of sericin is removed through degumming and discharged in the silk processing wastewater. Thus the recovery and effective utilization of sericin would benefit the Indian silk processing industry. It will generate revenue by selling the sericin powder as a moistening /antioxidant/ finishing agent and simultaneously it will reduce the concern of textile effluent. Sericin protein extracted from the silk is made of 18 amino acids most of which have strongly polar side groups such as hydroxyl, carboxyl and amino groups. The sericin molecule has got special properties such as antioxidant, UV protection, moisture adsorption and antibacterial activity.

Keywords: Sericin, Silk, Amino acids, Antioxidant.

CASE STUDY ON THE DISAPPEARANCE OF INDIAN ART FORM

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Abstract

India's art heritage is as diverse as its people's. They are known for their rich cultural heritage from ancient times. From the marshy desert of Kutch in Gujarat, emerged the exquisite form of painting Rogan, to Manjusha art from Anga Pradesh, to Parsi embroidery which was a part of India's diversity ever since the Bronze age, till the exquisite art of Gulabi Meenakari from Banaras. These paintings originally had numerous genres but cannot be spotted now due to fewer people participating in this form of art. Traditions represent a critical piece of our culture. They help to form the structure and foundation of our families and our society. It also reinforces values such as freedom, faith, integrity, personal responsibility, a strong work ethic, and the value of being selfless. Industrialization and modernization could be blamed for the miserable condition of our art forms. In the current scenario, people have access to everything around the world. As a result of which traditional Indian art forms are being overlooked. There are so many art forms that are yet being unrecognized and also on the verge of disappearing. In this case study, we will see how and why the ancient art forms are disappearing and why the native artisans are moving towards different jobs.

Keywords: Art heritage, Gulabi Meenakari, Artisan, Traditions, Craftsmanship, Rogan, Gulabi meenakari, Silver metal, Glass paints, Khatri community

A review on Sampling Export Quality and Manufacture Drawbacks

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Abstract

A sample is one of the key elements of the pre-production processes in the garment industry. Sampling also gives us market knowledge along with other knowledge of garment production. The sample department plays a vital role in the garment industry for the buyers to place the order. There are many drawbacks faced by the department in manufacturing the garment as well in transit. The transit drawback should be rectified quickly and the remedy for protecting the garment is how well the packing is done. Vacuum packaging and shipment packaging are the best packaging done for transit samples

Keywords: Sample department, Workflow, Drawbacks, Remedies, Vacuum packaging, Shipment packaging.

A Study on the importance of fashion week in the fashion industry

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Abstract

Fashion is a dynamic global industry that plays an important role in the economic, political, cultural, and social lives of an international audience. It spans high art and popular culture and is a significant part of material and visual culture. Does fashion reflect and shape contemporary culture? It has fashion developed since the Renaissance. What questions can we ask about its status, ethical credibility, and influence on

consumers? Has globalization affected the fashion industry? Fashion as a creative force, a business, and a means of communication is explored.

Keywords: Cultural, international audience, popular culture, Creative, the Fashion industry

A study on high end brand marketing strategies

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Abstract

This study aims to raise awareness of luxury brands that will face challenges in the future. Marketing has seen the world going through ups and downs, allowing brands to share their stories across all platforms. The choice between uniqueness and authenticity distinguishes the luxury brand from the competition. Creating awareness is one of the fundamental communication strategies used by all brands. The challenge is that reaching the audience across all other brands, marketing strategies is extremely competitive yet luxury brands develop innovation. By utilising their own craftsmanship, all luxury brands have been able to approach customers in a unique manner. Many luxury brands are studied in this paper, and their future challenges are identified.

Keywords: brand, social media, marketing, fashion industry.

A STUDY ON RENEWABLE DIAPER

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Abstract

Baby diaper are made up of different kinds of fibers such as bamboo, cotton, rayon, wood pulp and or cotton linters. To prevent such nappy rashes some kind of an antibacterial finishes is essential. Plants and plant product are traditionally used for healing of wounds, burn injurie, antifungal, antiviral, antibacterial and antimicrobial activity against skin infections. Since these natural antibacterial agents are less toxic, less irritant and biodegradable they can be used as an antibacterial finish for baby diaper.

Keywords: Renewable Diaper, Antimicrobial Finish, Natural Fiber

ARTIFICIAL INTELLIGENCE IN THE TEXTILE INDUSTRY

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Abstract

Fashion brands around the world are implementing Artificial Intelligence into their design process. They collect data on customers to find what better suits them. They help customers choose clothes based on the fabric, colours and preference of style. AI Technologies are revolutionizing the fashion industry across the board, including design, production, shipping, marketing and sales. The usage of AI in the fashion business of 2020 has grown entrenched and a high percentage of fashion stores that are not implemented AI are now risking insolvency.

Keywords: Artificial Intelligence, fashion, revolutionizing, insolvency, shipping, clothes

A STUDY ON IMPORTANCE OF COLOR INFLUENCE IN FASHION

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Abstract

Colour is a powerful communication tool and can be used to signal action, influence mood and even influence physiological reactions. Certain colours have been associated with increased blood pressure, increased metabolism, and eyestrain. Colours have an impact on users – either positively or negatively – when they are used for fashion objects. Colours can also influence customers’ emotions likely. Influence consumers’ purchase decisions, and how they see things. Most of us have a favourite colour or prefer some colours over others.

Keywords: Communication, Physiology, Positive, Negative, Fashion, Emotions and Favourite.

AN REVIEW ON PROBLEM OF FASHION WASTE IN ARCHITECHTURE FIELD.

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Abstract

The growing textile industries face challenges to up-cycle and recycle their textile wastes into useful industrial products. There is a lack of study on recycled textile applications in buildings. Our Aim is to prevent the excess landfill of textile wastes. The objectives are to investigate innovative design solutions from the activity of recycling (process) textile waste. The converting process of textile wastes in upcoming or growing fields like architectural area must be encouraged .The ecological textile wastes are not an major issue than non bio-degradable textile wastes .so that it can be reused and used in major fields .Currently, the textile industry is facing some challenges to produce non-

hazardous solid textile waste that can be recycled as required by consumers and local authorities. The textile recycling involves the reuse of used clothing, fibrous materials, and production losses of the manufacturing process of clothing. The recycling rate for all textiles was 14.7 percent in 2018, with 2.5 million tons recycled. Textile materials have been reused in different applications, for example, in the production of poor-quality wires, crushed to manufacture noise and temperature insulation materials, and as fillers or reinforcements of concrete. The global fashion industry produces over 92 million tonnes of waste per year. In the U.S. alone, over 17 million tons of used textile waste are generated annually. Thus we control the fashion waste by using this devolving smart technology and keep the land clean without fashion waste landfill. Therefore Upcoming future of textiles are lead to healthy ecological environment without any landfil, stuck on hydrofactors and also a healthy industry in future.

A Case Study on Alternative For Existing Fibers

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Abstract

This case study presents the Alternative Fibers which are obtain now a days for the existing fibers.Which are manufactured by using various chemical that leads to a huge ecological crisis.As these alternative fibers are obtained from natural sources with minimum level or minimum amount of chemical usage.As per the growth of textile field in developing eco-friendly textile products are in a huge demand.So by using various technologies in the manufacturing process of these alternative natural fibers.which are going to be an land fill are reused in these technique to produce pollutant free alternative fibers.

Keywords: Bio-degradable-Eco-friendly-Antimicrobial-Lotus Fiber-Banana Fibers-Orange Fibers-Chemical Free.

A STUDY ON FASHIONABLE APPROACHES TO UPCYCLING

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Abstract

Sustainable fashion is a design philosophy and movement that promotes the environment and social responsibility. Sustainable fashion is defined as clothing, shoes, and other accessories that are manufactured and used in the most sustainable manner possible, taking into account both environmental and socio-economic. Essentially, ethical and sustainable fashion is an approach towards sourcing, manufacturing and designing clothes which maximizes the benefits to the industry and society at large, at the same time minimizes the impacts on the environment. Sustainable Fashion Ensures Fair Wages & Proper Working Conditions. Cheap fast fashion garments are made possible by harsh working conditions for garment workers. Most fast fashion brands produce garments in developing countries where workers are paid a living wage. The modern linear system of manufacturing and the promotion of fast, disposable fashion puts pressure on non-renewable and threatened resources, especially water, and produces huge quantities of waste, most of which goes to landfill or for incineration. The industry's methods and materials can also be highly polluting. Fashion is responsible for 10 per cent of human-caused greenhouse gas emissions and 20 per cent of global wastewater, and uses more energy than the aviation and shipping sectors combined. The apparel industry accounts for 10% of global carbon emissions, and most of the world's clothes are produced in China, Bangladesh, or India, countries largely powered by coal. This is the most polluting type of energy in terms of carbon emissions. 20% of industrial pollution comes from the textile manufacturing process. Over 8,000 chemicals are used to turn raw materials into clothing. Workers come in direct contact with these chemicals often without adequate safety protections and are at risk of contracting deadly diseases. Microfibers are emerging pollutants with widespread distribution in the environment and have adverse ecological impacts. Approximately 2 million tonnes of microfibers are released into the ocean every year from various sources, of which 700,000 micro fleeces are released from each garment through the domestic laundry. Microfibers, as the name implies, are tiny, so they

can easily move through sewage treatment plants. Unlike natural fibres, such as cotton or wool, synthetic fibres do not biodegrade and tend to bind with molecules of harmful chemical pollutants found in wastewater, such as pesticides or flame retardants.

Keywords: Sustainable fashion Microfibers, Reusable fabric, Global pollution, upcycling

Evaluation of free radical scavenging activity and reducing potential assay of hydroethanolic leaves extract of *Mentha spicata L.*,

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Abstract

The main objective of this research was aimed to investigate the *in vitro* free radical scavenging activity of *Mentha spicata L.*, leaves. Free radicals are produced because of a variety of metabolic processes, and their excessive generation causes a variety of disorders. As a result, excess free radicals must be neutralised. The phytochemical activity of leaves of *M. spicata L.*, was assessed using different solvent extracts like water, hydro-ethanol (50:50), ethanol, chloroform, acetone, and petroleum ether. Among the different solvent leaves extract, hydroethanolic leaves extract revealed a high content of phytochemicals. So, the hydroethanolic leaves extract was used to study the free radical scavenging potential of *M. spicata L.*, leaves. Standard methods were used to assess the free-radical scavenging activity of *M. spicata L.*, leaves extracts. The plant *M. spicata L.*, has a high DPPH, Hydroxyl radical, and Nitric oxide scavenging activity. The plant's resistance to free radicals was assessed using a reducing potential assay. It can be inferred that the plant effectively scavenges free radicals. It is concluded that the hydroethanolic leaves extract of *M. spicata L.*, can be used as a possible source of antioxidants and as a therapeutic agent in free radical-induced disorders. According to the findings, isolation, and characterisation of the active antioxidants, which could serve as a potential supply of natural antioxidants, would require more research.

Keywords: *Mentha spicata L.*; Free radicals; Scavenging activity

Structural aspects & Applications of compounds present in Magic mushrooms - A DFT study

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Abstract

Psilocybin, the main compound of psilocybin mushrooms (commonly known as Magical mushrooms) whose chemical formula is {3-[2-(dimethyl amino) ethyl]-1H-indol-4-yl dihydrogen phosphate} is known for its hallucinating property. Biological studies proved their psychoactive nature. They are also used as recreational drugs and are proven effective for many mental and neurological disorders like depression, Alzheimer's, etc., and also helps to treat Alcohol addicts. The structural, geometrical & Spectroscopic properties of psilocybin were studied using computational chemistry tools like DFT by BP86/TZVP using ORCA, Hex and found for the possibilities for their derivatives like Psilocybin S, Psilocybin Se, Psilocybin Te, Psilocybin Tn.

EXTRACTION OF ANTIBACTERIAL DYE FROM GOMPHRENA GLOBASA (VADAMALLI)

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Abstract

Gomphrena globosa is also known as Globe Amaranth. This flower is a member of the family Amaranthaceae and it is well known for its properties. The herbal dye can be used to control pollution by replacing modern dyes in the colouring industry which is one of the most polluting sectors in the world. The present study discusses the extraction of herbal dye from *G. Globosa* using various solvent methods including water, acetone, NaOH and testing the anti-microbial property of *G. globosa*.

KEYWORDS: *Gomphrena Globosa*, Anti-microbial, Herbal dye, Pollution, Mordants

**EVALUATION AND PRODUCT FORMATION FROM
FERMENTED INDIAN COFFEE VARIETIES WITH *Saccharomyces
cerevisiae***

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Abstract

Coffee plays a major role in all life. Fermented coffee seeds can increase the antioxidant level in the body. Seeds are ground to powder and fermentation was carried out with *Saccharomyces cerevisiae*. The powdered seeds were used for further tests to check the antioxidant level, polyphenol content, flavonoid content, and tannin content. After the evaluation, the fermented coffee powder can be incorporated into food products (gummies) and it will make it a rich antioxidant product by testing some parameters. In this processed coffee powder, robusta shows the major difference in antioxidants (101.2%), superoxide dismutase activity (82.65%), Flavonoid (81.15%), and tannin (42.85%). Peaberry shows higher polyphenol (51.4%). Gummies are made by using gelatin, sugar syrup, citric acid, and fermented coffee powder. Then the gummies were taken for further studies, like antioxidant activity, protein estimation, flavonoid content, texture, and sensory evaluation. From the evaluation of gummies, robusta coffee powder incorporated gummy, showed the highest values in antioxidant (47.08%), Protein (71.6%), and polyphenol (55.15%). Peaberry shows the highest values in Flavonoid (38.8%) and Tannin (41.85%). In sensory evaluation, the robusta showed higher content when compared to the peaberry in the product (gummies).

An overview of Bio medical in textile industry

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Abstract

In this recent trends, application of Bio medical in the textile sector has increased rapidly due to its unique and valuable properties. Bio medical textiles are basically known as fibrous textile structures prepared from synthetic or natural materials that are used in

an internal or external biological environment as a medical device to improve the health and medical condition of the patient. Bio medical Textiles are used in for manufacturing two types of non absorbable sutures natural and synthetic. Natural non absorbable sutures are made from waste silk, cotton and linen. Synthetic sutures are made from polyamide, polyethylene, polypropylene or polyester. Medical textiles are an important part of the large variety of technical textile products, ranging from high volume disposable products for baby diapers, feminine products and adult incontinence through to extremely specialized and high value textile products for use in blood filtration surgical sutures etc., This review article focus on the properties, application and recent developments of Biomedical in textile industry in a detailed manner.

Keywords: Bio medical, recent developments, Textiles, applications, properties

Hyperhomocysteinemia and Vascular Dementia: a correlative study with brain atrophy, but no amyloid burden

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Abstract

Dementia is a condition that substantially hinders a person's capacity to execute activities of daily life by presenting as an impairment of mental processes, such as remembering, thinking, reasoning, and judgement. The syndrome is generally brought on by a collection of progressive, neurodegenerative brain conditions that manifest in old age. High homocysteine levels are considered risk factors for dementia in the elderly population. The experiment's goal was to determine whether brain atrophy and Alzheimer's disease could both be caused by hyperhomocysteinemia. The experimental protocol was employed for 14 days of exposure to Homocysteine through the *vena caudalis*. Behavioural studies, biochemical analysis and histological alterations were monitored. HHcy-induced behavioural and biochemical alterations were noticed. The number of neurons identified was found to have significantly decreased at the histological level, but the amyloid which is indicative of Alzheimer's disease was not found to be present.

KEYWORDS: Dementia; Hyper Homocysteinemia; Behavioural; Biochemical; Histopathological; Amyloid Presence

A Review Paper on Technical Textile Fiber Identification

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Abstract

Technical textiles have been defined as textile materials and products manufactured primarily for their technical and performance properties, rather than for their aesthetic or decorative characteristics. Fibre identification is the most important thing in designing a specific-purpose dress. In this study, different textile fibres are identified through technical textiles. Fibres are the key constituents of all fibrous assemblies used in any technical and nontechnical applications; hence, to utilise these materials effectively, an in-depth knowledge and understanding of their physical and chemical properties are imperative to any design structures and their expected performance criteria. The purpose of this section is to briefly review some interesting technical Fibers, characteristics and functions etc.

Keywords: Fiber Identification, Technical textiles Global and national markets, Textile-production

Profiling of the Phytoconstituents and Free Radical Scavenging Properties in the aqueous bark extract of *Cinnamomum verum*

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Abstract

This study was to validate the phytoconstituents and free radical properties present in the aqueous extract of *Cinnamomum verum* barks. GC-MS analysis was carried out to profile the bioactive constituents of *C. verum*. Free radical scavenging assays such as DPPH, Nitric oxide and Superoxide were determined. Ascorbic acid acted as Positive control. The availability of phytoconstituents in the qualitative analysis was further

carried out for quantitative analysis and found to be 210.68 ± 0.937 mg/g in phenols, 323.24 ± 2.625 mg/g, in tannins, 93.022 ± 0.853 mg/g in carbohydrates, 187.87 ± 1.874 mg/g in proteins and cardiac glycoside 2.22%. GC-MS analysis revealed the presence of Cinnamaldehyde and Eugenol in greater proportion. Radical scavenging activities of DPPH, Nitric oxide and Superoxide were more effective in terms of the percentage of inhibition than Ascorbic acid at the concentration of 250 μ g/ml and their IC₅₀ values were found to be 66.083 ± 0.531 μ g/ml, 40.786 ± 0.127 μ g/ml and 138.607 ± 2.674 μ g/ml. The occurrence of a higher concentration of phytoconstituents evidenced implies that *C. verum* has significant therapeutic prospects, and subsequent research is required in the future to isolate these bioactive substances with the pharmacological profile. The outcomes, strongly signify that *C. verum* possesses strong scavenging action on free radicals and could be administered as a natural antioxidant source against oxidative stress.

Keywords: *Cinnamomum verum*, Free radicals, Antioxidants, Phytochemicals, Traditional Medicine.

Sustainable approach on development of ecofriendly antimicrobial finished fabric using Prodigiosin of *Serratia marcescens* MTCC 8708

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Abstract

Textile is one of the largest industrial sectors that play a significant role in the Indian economy. Synthetic dyes are coloured compounds widely used in textile industries for colouring fabrics. Many synthetic dyes, including azo dyes used in textiles, are derived from coal or petroleum-based compounds. These compounds are unsustainable, non-renewable, and non-degradable that have a negative impact on biotic and abiotic ecosystems. In addition, growing concern towards the teratogenicity and carcinogenicity of synthetic dyes and microbial pigments have renowned recent attention for textile applications. *Serratia marcescens* are an eco-friendly and non-toxic bacteria, and thus chosen for pigment production. It produces a pigment known as prodigiosin, a tripyrrole, red-coloured, non-diffusible, and hydrophobic compound. The microbial growth on textile materials during use and storage affects the durability and wearer. It could be controlled by incorporating antimicrobials into the textile material. Besides colouring properties, prodigiosin is found to exhibit antimicrobial properties. Hence an attempt was

made to use prodigiosin as an alternative to synthetic dyes for the development of eco-friendly fabric imbued with antimicrobial property. Based on the optimization of growth parameters, it was observed that Yeast malt extract medium supplemented with 0.5% NaCl and 1% mannitol at pH of 7, temperature of 24°C and growth time of 72 hours resulted in a maximum yield of prodigiosin. Further, prodigiosin was characterized and identified by chromatographic and spectroscopic studies. An R_f of 0.89, absorption spectrum of 534 nm, molecular weight of 322 D m/z, functional groups obtained in the FTIR spectrum and chemical shifts in NMR conferred that the extracted pigment could be prodigiosin. The purity of prodigiosin was determined as 81.13%. The antimicrobial activity, minimum inhibitory concentration, minimum bactericidal concentration of prodigiosin was evaluated against various microbial pathogens. Prodigiosin exhibited prominent antimicrobial activity against *Staphylococcus aureus* and was found to have MIC of 62.50 µg/mL and MBC of 250 µg/mL. Moreover, the synergistic effect of prodigiosin with streptomycin was determined. It was observed to have an antagonist effect with an FIC value of 4.50, which confers the ability of prodigiosin alone to act as a significant antimicrobial compound. Additionally, prodigiosin was coated onto cotton fabric and their physical parameters were assessed. It was found that prodigiosin coated cotton has improved tensile strength, elongation, abrasion, crease recovery, stiffness, thickness, tearing strength, and bursting properties than control. The qualitative and quantitative assessment of prodigiosin coated was done and observed to have a significant bactericidal effect on *Staphylococcus aureus*. The biodegradation ability of prodigiosin coated fabric was determined in soil burial assay and it showed enhanced degradation than the control. Overall, studies suggested that prodigiosin showed remarkable colouring properties with antimicrobial potential and thus, prodigiosin could be effectively used for textile applications.

Keywords: Microbial Pigment, Prodigiosin, *Serratia marcescens*, Antimicrobial activity, Antimicrobial textiles

**EXTRACTION, PURIFICATION AND PRODUCTION OF
PROTEASE ENZYME FROM *ACTINIDIA DELICIOSA* AND THEIR
ANTI INFLAMMATORY ACTIVITY**

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Abstract

Protein is one of the major food groups needed for proper nutrition. Now a days enzymes are been used commercially. Proteolytic enzymes or proteinases are the group of enzymes whose catalytic function is to hydrolyze (breakdown) proteins. Proteolytic enzymes are used for a long list of conditions including cleaning wounds on the skin, help with digestion, pain and swelling, and many other conditions. Production and their anti-inflammatory activity of protease enzyme by *actinidia deliciosa* was the aim of this study. Kiwifruit (*Actinidia deliciosa*) is one of many fruits that are rich in enzymes like protease, Actinidin, bromelain. Extract of *actinidia deliciosa* was assessed for its anti-inflammatory activity by invitro methods. Kiwi fruit peel is weighed and filtered. The supernatant was precipitated with 70 % of ammonium sulphate. The protease enzyme was purified by dialysis, column chromatography and SDS –PAGE. The activity was done at pH 7.3 and at room temperature and incubation time of about 24 hrs. After purification protease enzyme activity was done. In vitro anti-inflammatory activity was evaluated using proteinase inhibitory activity. This activity showed 53% of anti –inflammatory in *Actinidia deliciosa* peel.

Keywords: *Actinidia deliciosa* , proteinase inhibitory activity

An overview of Bio Medical in textile industry

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Abstract

In advance with the polymers, fibres, yarns, chemical and fabric forming technologies there have been a dynamic expansion in the medical textiles. Textiles have become the part of every phase of life. Medical textiles products used for medical and biological

applications. The spectrum of application of medical textile ranges from simple cotton bandages to advanced tissue engineering. Advances in textile manufacturing and medical technologies have made medical healthcare an important industry in textiles. The manufacture of medical textile is a growing sector. Textiles are used in the variety of products in medical including replacement of damaged, injured or non functional organs. Additionally Covid-19 pandemic generated a higher demand for certain medical textile applications. The textile based medical products are used for prevention, care and hygiene purpose. The properties of medical textile are strength, softness, biocompatible, elasticity, flexibility, non toxic, non allergic, air and water permeability. Bio medical in textile fibres are in both implantable and non implant applications. This review article focus on the properties, application and recent developments of Bio medical in textile industry in detailed manner.

Keywords: Bio medical textile, properties, application, recent development

AGRO TEXTILES – THE PEDESTAL

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Abstract

The agro textiles is used to classify the woven, nonwovens and knitted fabrics useful for agricultural & horticultural use. The textile resources generally produce by synthetics in a variety of decompositions, utilized in the form of moreover woven or nonwovens. The performance of textiles is also now broaden to preserve the agro products like plants, vegetables and fruits from weather, weed and birds, etc. Agriculture can engage in recreation by complementing the strengths of each other, to fabricate a new progression of 'Agrotextiles' revolution. It also gives you multidimensional views and solutions to the troubles being faced by agro industry, from the textile sector. "Textiles constantly keep up its style of exclusivity by creating enormous technological strides in all the fields ". This is the chance to change our environment with eco friendly products in agriculture around the world. Agro products were made up of soil and environment friendly. Herewith textile will prove that "Agriculture is the backbone of our country"

Recycling of dying water through biological treatment

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Abstract

Textile industries use large quantities of water and release them in the form of waste water as a byproduct. This waste water contains hazardous toxic substances which pollute land and water. The aim of biological waste water treatment is to remove the major pollutants from waste water. The chemical treatment is indented primarily to remove color and chemical oxygen demand (COD) of waste water. Iron exchange method, reverse osmosis, Nano filtration are majorly used for dye water treatment.

IoT Based smart health care system

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The term "Internet of Things" (IoT) refers to real-world things that include sensors, computing power, software, and other technologies and may link to other systems and devices via the internet or another communication network and exchange data with them. In upcoming generations , IoT devices are very useful and have more impact in healthcare systems. Smart healthcare monitoring system is a capable of monitoring blood pressure, heart rate, oxygen level, and temperature of a person. This system is most helpful for a patient who needs to be monitored 24*7.It provides multiple options to change the traditional management of patients. It helps patient in case of emergency situations by providing them by immediate health discussion from the doctor whether the patient at a distant location. One of the major advantages of the smart healthcare system enables Remote monitoring of the patient by the family or guardian. This paper helps to know about the various IoT based monitoring systems. Keywords: Internet of Things, Healthcare.



About PSG College of Arts & Science (PSG CAS)

PSG College of Arts & Science was founded in the year 1947 before independence by the PSG & Sons' Charities Trust with a mission to set education on a noble perch accessible to all in pursuit of knowledge and world-class education. The institution promotes deep research and lifelong learning in the fields of Arts, Sciences, Humanities, Management, Computer Science, Social Science and Life Sciences. PSGCAS is one of the largest Higher Education Institutions of South India with 43 Undergraduate Programmes, 4 BVoc Programmes, 29 Postgraduate Programmes, One Five year Integrated Postgraduate Programme, 3 PG Diploma Programmes, M.Phil and Ph.D Programmes are offered in 24 Disciplines. In addition to this, 12 Career Oriented Add-On courses are offered for enhancing the life skills of students.

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The PSG Center for Academic Research and Excellence was founded in October 2015 by the PSG & Sons' Charities Trust with a mission to promote teaching excellence in all the Colleges under the Trust. The center also focuses on creating and sustaining effective faculty-student relationships and aims to pursue its mission by helping educators at PSG to practice a learner-centric course design, innovative pedagogy and effective assessments so as to shift the focus of the teaching-learning process from delivery of knowledge to the facilitation of knowledge acquisition. The center offers an effective one-to-one mentoring system to the faculty in various topics pertaining to learner-centric pedagogy and effective faculty-student relationships. It also encourages research activities that enhance the quality of teaching at PSG and supporting the dissemination of research findings about the teaching-learning process.

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