3.3.1. Publications
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CURCUMIN AS A GREEN CORROSION INHIBITOR-A REVIEW

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Abstract

Corrosion is the deterioration of metals by its environment. The corrosion leads to economic loss, damage of structures, leakage, contamination of environment etc. Eventhough, corrosion is an unwanted process, it has some beneficial effects such as batteries, electrochemical millings, electroplating etc. Lot of research works are going on to minimize the corrosion rate. The corrosion inhibitors are used to protect metals when it is part of a closed system. The inhibitors are used in cooling towers, heat exchangers, filtering equipments, storage tanks etc. The inhibitors are also used in pickling solutions. Chromate is the first type inhibitor used and was replaced by other inhibitors due to its toxicity. The green inhibitors are preferred due to their environmental friendly nature, ease of availability, cost effectiveness, non toxic nature etc. This review discusses the inhibition efficiency of curcumin for protecting metals in different environmental conditions based on the literature.

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Growth and characterization of heterobimetallic copper-sodium complex of cyanuric acid: A novel photoluminescent material

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Highlights

- Novel crystals of copper-sodium bimetallic complex of cyanuric acid (CSC) are obtained by single gel diffusion method.
- Both FTIR analysis and TGA/DTA confirms the presence of sodium atom in the grown crystal.
- The crystal structure with two metals coordinated to ligand is detailed by single crystal X-Ray diffraction.
- The optical properties like band gap and refractive index are obtained from UV visible spectroscopy.

- The crystal shows dielectric behavior and also photoluminescence emission in the violet region.

Abstract

Deep blue coloured novel crystals of copper-sodium bimetallic complex of cyanuric acid are obtained by single gel diffusion method at room temperature. This is the first report on the exquisite heterobimetallic crystal structure of cyanuric acid complex. The metal coordination is confirmed by FTIR analysis. TGA/DTA provides an insight into the thermal properties of the crystal. The thermal decomposition starts at 197.76 °C up to which the crystal is stable. Both FTIR analysis and TGA/DTA confirm the presence of sodium atom in the grown crystal. The crystal structure with two metals, coordinated to ligand is elucidated by single crystal X-Ray diffraction. The optical behavior is studied and optical properties like band gap and refractive index obtained from UV visible spectroscopy are 3.53 eV and 1.25 respectively. The photoluminescent study reveals the emission of radiation in the violet region at 416 nm. The dielectric studies have been employed to examine the dielectric behavior of this bimetallic complex in terms of variation of dielectric constant, dielectric loss, ac conductivity and impedance with frequency of alternating electric field. Using the single crystal XRD data, the polarisability α is calculated as 1.4×10^{-22} cm^3 from penn analysis and Clausius Mossotti relation. The calculated value of polarisability from band gap is found to be 0.8×10^{-22} cm^3. The important optical property possessed by this bimetallic complex is the photoluminescent emission enabling it to be used in luminescent device applications.

Introduction

In search of new materials with versatile applications, bimetallic metal organic frameworks (MOFs) form an interesting subject of investigation as it lead to various applications like gas storage and separation, catalysis, bio applications, sensors etc [1]. Heterobimetallic MOFs produce novel structures when two metals are incorporated to the ligand. The incorporation of different metals can also enhance the catalytic properties of the MOFs [2]. Here for building the framework, the ligand 1,3,5-Triazine-2,4,6-trione also named as cyanuric acid ($C_3H_3N_3O_3$) has been chosen successfully as it possess multiple H-bond donor centres. The most stable isomer of cyanuric acid is keto form even though it exists in either keto or enol form [3]. The complexation occurs in its keto form. The ligand itself is used in magnetic enamels, in electrical varnishes, plastics with enhanced properties, flame retardant resins and solid lubricants, cross linking and curing agents in the manufacture of plastics and coating [4].

Complexes of cyanuric acid like strontium cyanurate and barium cyanurate have already been studied and reported by us stating its properties and applications [5,6]. Here to enhance the applicability of the ligand material, a bimetallic copper and sodium complex of cyanuric acid is introduced which is highly efficient as luminescent material. The luminescent materials have applications in the areas of lighting through compact fluorescent lamps, phosphors for solid state lighting, long persistence phosphors, X ray imaging and phosphors for display [7]. Violet-light-emitting materials are used in digital versatile disks (DVDs) for higher storage capacity and in laser diodes for undersea optical communications [8]. Earlier, a silver complex of cyanuric acid synthesized hydrothermally at high temperature had been reported to be a photoluminescent material with blue emission [9]. Moreover heterobimetallic complexes of cyanuric acid are not reported so far up to our knowledge. The method utilized for the growth of this bimetallic complex is single gel diffusion technique, which is more economic and helps in producing good quality crystals at room temperature. The starting material intended to grow was copper complex of cyanuric acid. Copper cyanurate had already been reported by Woher et al. and Ostrogovich et al. but further details are not available [10]. The FTIR spectral analysis and TGA/DTA provide evidence for the presence of sodium atom also in the grown crystal. X-ray analysis reveals the novel heterobimetallic structure of triclinic crystal system with space group P-1 and cell parameters

ScienceDirect

Journal of Non-Crystalline Solids

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Synthesis and characterization of 50BaO - (5-x) Al_2O_3 - xR_2O_3 - 30B_2O_3 - 15SiO_2(*R*=Nd, Gd) glass-ceramics

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Abstract

Glass-ceramics of composition 50BaO-(5-x)Al_2O_3-xR_2O_3-30B_2O_3-15SiO_2(*x*=0, 1, 2, 3,4,5 and *R*=Nd, Gd) have been synthesized by conventional melt quenching method followed by controlled heat treatment. The glass transition temperature (T_g) and crystallization temperature (T_c) have been observed from the Differential Thermal Analysis (DTA). The density of glasses and glass-ceramics has been measured. X-ray diffraction (XRD) technique has been used to confirm the amorphous nature of the glasses and to identify the crystalline phases formed in glass-ceramics. The structural changes due to heat-treatment have been investigated using Fourier Transform Infrared (FT-IR). The coefficient of thermal expansion (CTE) of glasses lie within the range (11.40 - 11.81) x 10^{-6}/°C, and increased to (12.32 – 12.81) x 10^{-6}/°C for glass-ceramics. Microhardness values lie in the range 9.34 – 9.48 GPa. Owing to the suitable thermal properties these glass-ceramics can be considered as suitable materials as sealants for Solid Oxide Fuel Cells (SOFC).

Introduction

PAPER • OPEN ACCESS

Effect of Sr on the luminescence properties of Eu^{3+} activated xZnO-(1-x) SrO-Al_2O_3 phosphors

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Abstract

$BaGa_2O_4$:1%Eu^{3+} PHOSPHOR FOR PHOTOLUMINESCENCE AND DIELECTRIC APPLICATIONS

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Abstract- Developing single phase phosphors for light emitting device has great demands for LED applications. $BaGa_2O_4$ doped with one molar concentration of europium has been prepared by high temperature solid state reaction route. The structural studies were done using X-ray diffraction technique. UV-Visible absorption spectrum, Photoluminescence (PL) and Dielectric studies were also done. The sample doped with Eu shows strong emission at 613 nm with several weak emission peaks in the red region when excited at 393nm. The insulating character of $BaGa_2O_4$ changes with the doping as evidenced by the increase in conductivity.

Keywords: UV-Visible absorption spectrum ,Photoluminescence (PL), Dielectric

I. INTRODUCTION

Gallium oxide can exist in different polymorph such as α-,β-,γ-,δ-,ε depending upon the method of preparations and each polymorph shows different characteristics [1]. Gallium oxide is used as phosphors in optoelectronic devices. $BaGa_2O_4$ has attracted much attention as a phosphor material for LED application. In $BaGa_2O_4$, there are two different barium sites in which one site occurring three times more frequently than other. The nine oxygen ions are coordinated on both sides. The structure of barium gallium oxide is stuffed tridymite structure [2].Doping of a single rare earth ion into a host matrix can control emission colour to a suitable region. Hence doping on a phosphor has attracted much attention. The synthesis of $BaGa_2O_4$:1%Eu^{3+} has been done by solid-state reaction method. It is the mostly widely used and simple method for the preparation of phosphor materials.

The earlier studies show that rare earth free $BaGa_2O_4$ luminescent compound has emission in the bluish region [3]. Early report shows that $BaGa_2O_4$ doped with Eu prepared by solid state reaction method and calcined in a reducing atmosphere shows no luminescence effect [2]. The present work aims to prepare $BaGa_2O_4$:1% Eu^{3+} in air atmosphere and study the structural,optical and dielectric studies. $BaGa_2O_4$ doped with Eu^{3+} shows strong red emission at 613 nm this is in need of white LED application. The optical band gap of $BaGa_2O_4$: Eu^{3+} obtained as 5.01 eV from Tauc's plot indicating the dielectric nature of the material and which is further confirmed by the dielectric studies.

II. EXPERIMENTAL

Powders of high purity (99.99%) $BaCO_3$, Ga_2O_3, Eu_2O_3 were used as starting reagents. Using an electronic analytical balance (Schimadzu), stoichiometric weights of the reagents were taken. The reagents were mixed thoroughly for two hours using an agate motor by adding double distilled water as the mixing medium. The slurry formed was dried using a hot air oven and then calcined at 1200^{o}C for 5 h. The calcined powder was then ground well for two hours. The obtained samples were characterized using X-ray diffractometer (XRD) [Model D8 Advance Antonn Paar, TTK450 using Cu X-ray source (λ=1.5406 A^0)].

III. RESULT AND DISCUSSION.

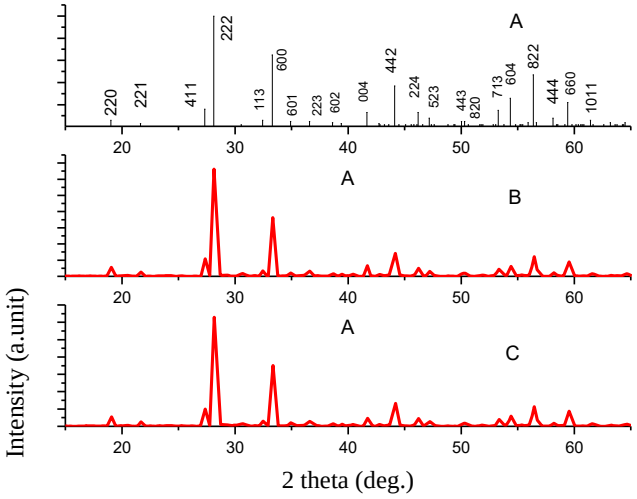

Figure 1. XRD patterns of A: JCPDS of $BaGa_2O_4$, B: $BaGa_2O_4$, C: $BaGa_2O_4$:1% Eu^{3+}

3.1 X-ray Diffraction Analysis

The XRD pattern of $BaGa_2O_4$:1%Eu^{3+} matches with the ICDD card no 46-0415 shown in fig 1.The samples shows good crystallinity and it is observed from the sharp peaks in the XRD pattern [3]. The substitution of Europium has no role in changing the structure of $BaGa_2O_4$ sample and the absence of additional peaks shows the single phase nature of the prepared sample

3.2 UV visible spectral studies

The UV-visible absorption spectrum of $BaGa_2O_4$:1%Eu^{3+} is shown in fig.2. An absorption peak is found at 270 nm. The optical band gap of the material is calculated using the Tauc's relation.According to Tauc's relation,the absorption coefficient of the material is given by the relation

$$\alpha h\nu = A(h\nu - E_g)^n \quad (1)$$

Where A is a constant for different transitions, α is the absorption coefficient, hν is the photon energy and E_g is the bandgap n=1/r, where r is an index having values 1/2, 3/2, 2 and 3 depending on the nature of electronic transition [3,4]. n=1/2 for a direct allowed transition in which $(\alpha h\nu)^2$ versus hν is plotted in fig.3. The extrapolation of straight line to $(\alpha h\nu)^2 = 0$ axis gives the value of optical band gap 5.01 eV of the material. It confirms the dielectric nature of the material and the material.

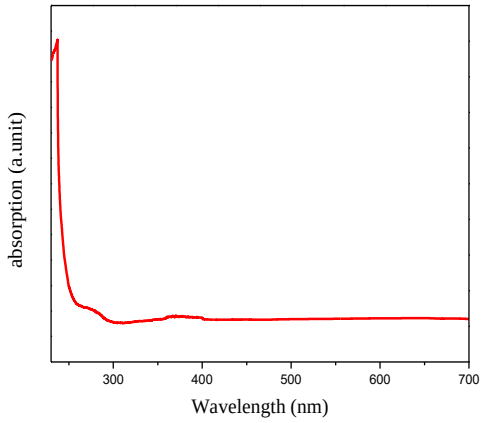

Figure 2. Absorption spectrum of $BaGa_2O_4$:1%Eu^{3+}

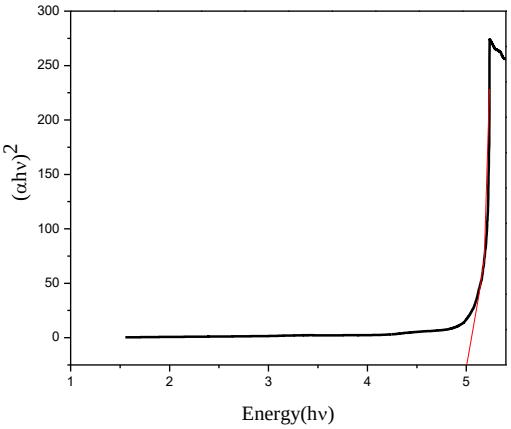

Figure 3.Tauc's plot of $BaGa_2O_4$:1%Eu^{3+}

3.3 Photoluminescence studies

$BaGa_2O_4$ shows the emission in the bluish region when excited with 270 nm. The sample $BaGa_2O_4$:1%Eu^{3+} excited at 393nm, the excitation wavelength of the dopant Europium, a strong wavelength emission at 613 nm is observed in Fig.4. Emission spectrum of $BaGa_2O_4$:1%Eu^{3+} shows a strong red emission transition of $^5D_0$-$^7F_2$ at 613 nm The peaks at 592,660 are corresponding to $^5D_0$-$^7F_1$, $^5D_0$-$^7F_3$ transitions [5,6].. The spectrum is dominated by red emission of Eu^{3+} and absence host emission is observed.

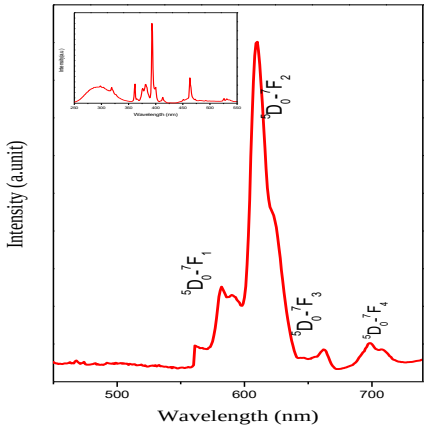

Figure 4. PL emission spectra of $BaGa_2O_4:Eu^{3+}$ excited at 393nm.Inset shows the excitation spectra

3.4 Dielectric studies

The dielectric studies of $BaGa_2O_4:1\%Eu^{3+}$ was carried out by preparing the sample of 11mm diameter and 2 mm thickness. Fig 5 and 6 shows the variation of dielectric constant and dielectric loss with frequency in the range 100-6 MHz. The dielectric constant is calculated using the relation

$$\varepsilon_r = Cd / \varepsilon_0 A \quad (2)$$

Where C is the capacitance, d is the thickness, A is the cross- sectional area of the sample and ε_0 is the free space permittivity. At low frequencies, the value of dielectric constant is very large due to the contribution of electronic, ionic, dipolar and space charge polarization [7]. Space charge polarization is mostly seen at low frequency [8].

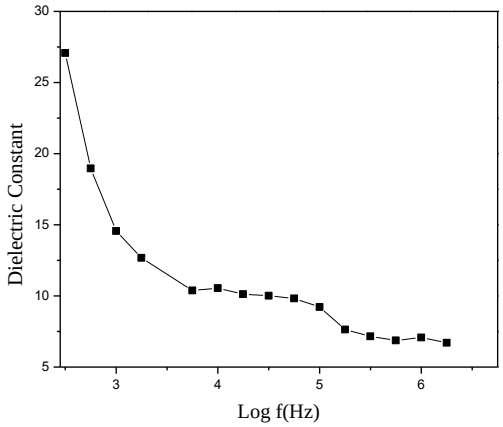

Figure 5. Dielectric costant vs log f of BaGa2O4:1%Eu3+

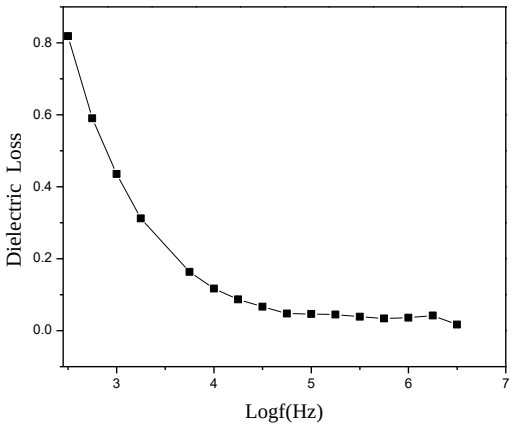

Figure 6. Dielectric loss vs log f of BaGa2O4:1%Eu3+

From fig.5 with increase in frequency, ε_r decreased indicating the absence of space charge polarization in the sample [9].The decrease in the dielectric constant with increasing frequency is attributed to Maxwell-Wagner interfacial

polarization [10]. Application of the electric field does not instantaneously polarize the material because of inertia and all the polarization contribute at low frequencies.The decrease of loss tangent (tanδ) with the increase of frequency in fig 6 suggests that the sample possesses enhanced optical quality and beneficial to fabricate low-loss microwave electronic circuits [9,10]. Miller rule says that at higher frequencies the lower value of dielectric constant is suitable for enhancement of second harmonic generation coefficient [4].

Ac conductivity is calculated using the relation

$$\sigma_{ac} = 2\pi f \varepsilon_0 \varepsilon_r \tan\delta \quad (3)$$

where ε_0 is the permittivity of free space, ε_r is the dielectric constant of the sample and f is the frequency of the applied field [4]. The variation of ac conductivity with frequency is shown in fig 7. The ac conductivity increases at higher frequencies. The dielectric constant and loss factor decreases with the increase in frequency .The dielectric constant (ε_r) is 6 at 1MHz.

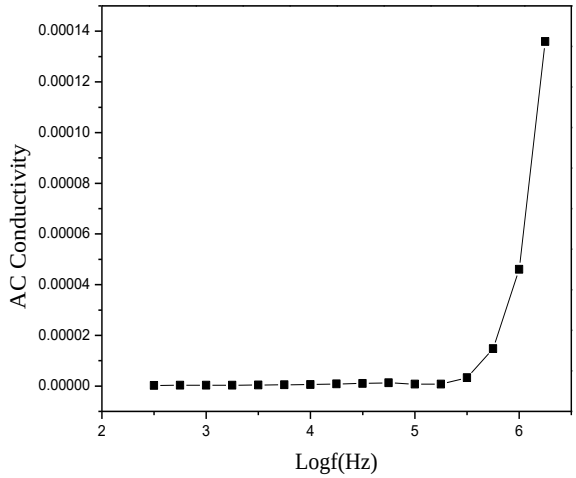

Figure 7. ac conductivity vs logf of $BaGa_2O_4$:1%Eu^{3+}

IV.CONCLUSION

$BaGa_2O_4$:1%Eu^{3+} sample was successfully synthesized by solid state reaction method. The sample was characterized by Powder XRD. The PL emission spectrum of the sample shows a strong red emission transition of $^5D_0$-$^7F_2$ at 613 nm when excited at 393nm.The optical band gap of the prepared sample is measured as 5.01eV from Tauc's plot. The dielectric studies show that the sample possesses good dielectric behaviour. There is a decrease in the dielectric constant with increasing frequency and increase in ac conductivity with increasing frequency.The material $BaGa_2O_4$:1%Eu^{3+} shows both the photoluminescence and dielectric properties. Hence the material can be a promising phosphor for optoelectronic as well as LED applications.

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Synthesis and photoluminescence studies of $CaAl_2O_4$ phosphor

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Abstract- Eu^{3+} activated $CaAl_2O_4$ phosphor has been prepared using the solid-state synthesis route. Structural and morphological analysis has been characterized using X-ray diffraction technique (XRD) and scanning electron microscopy (SEM). PL Excitation & emission spectra are analysed at 619 and 393 nm respectively. The characteristic Eu^{3+} emissions induced by the orbital transitions of $^5D_0$-^7F_j (j=0- 4) are analysed. The orange-red emitting of $CaAl_2O_4$: Eu^{3+} phosphor has possible applications in the field of fabricating of efficient and economical white LEDs.

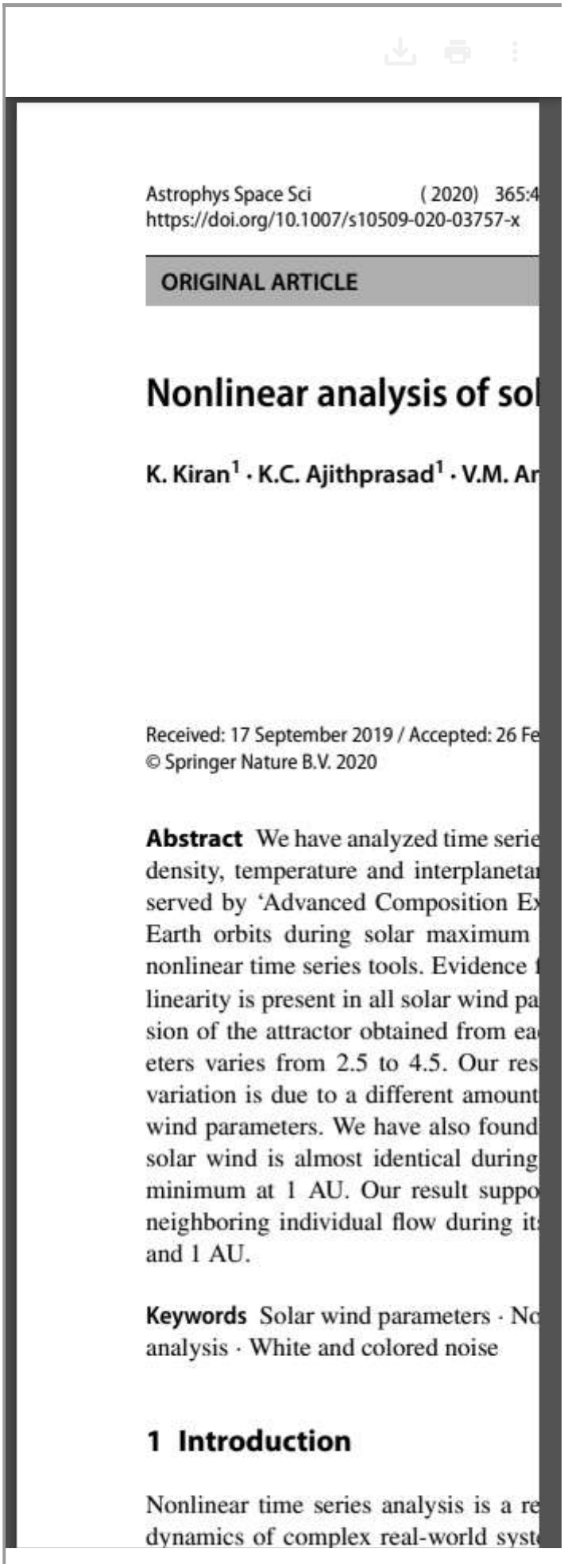
Keywords: X-ray diffraction, scanning electron microscopy, photoluminescence

I. INTRODUCTION

Burgeoning demand for inorganic phosphors in areas like white LEDs, X-ray imaging, long-lasting phosphors, HD- television screens, luminous paints, field-emission displays (FEDs), electroluminescent (EL) devices and fluorescent lamps has motivated researchers to discover contemporary host materials [1]. The phosphor host materials utilized earlier were alkaline earth phosphors based on sulphides. But the traditionally used sulphide-based phosphor (ZnS, CdS) repeatedly gets detracted in presence of tremendous energy electron collision owing to the detachment of cation - sulphur bondage. The action gives rise to corrosive sulphur – containing gas which eventually tarnishes the emission tips as well as curtails the device lifetime [2]. Nowadays alkaline earth aluminate hosts have amassed considerable recognition due to their rather intricate crystal structures when correlated with similar inorganic luminescent materials, which could result in the generation of more defects when stimulated with RE and non-RE ions [3]. Calcium aluminate is one among the common assuring leading aluminate materials which have caught the eye owing to its possible applications in detectors, in various optic devices, and biomedicines [4]. Besides, Ca aluminate displays high refractoriness, mechanical strength and exquisite luminescence properties. [5,6]. $CaAl_2O_4$ has been used in many fields due to its high luminescent brightness, elongated afterglow time, low toxicity and high chemical stability. Photoluminescence behaviour of Eu^{3+} activated $CaAl_2O_4$ synthesized by traditional ceramic synthesis method is not yet reported so far.

II. Experimental method

Starting reagents $CaCO_3$, Al_2O_3 & Eu_2O_3 [Sigma Aldrich (99.99% purity)] were stoichiometrically weighed and are mixed in a mortar, by adding double distilled water as blending medium. The slurry got was dried and finally calcined at 1200^0C for 4 hours in a high-temperature furnace. The structural formation of the



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ORIGINAL ARTICLE

Nonlinear analysis of sol

K. Kiran[1] · K.C. Ajithprasad[1] · V.M. Ar

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Abstract We have analyzed time serie density, temperature and interplanetar served by 'Advanced Composition Ex Earth orbits during solar maximum nonlinear time series tools. Evidence linearity is present in all solar wind pa sion of the attractor obtained from ea eters varies from 2.5 to 4.5. Our res variation is due to a different amount wind parameters. We have also found solar wind is almost identical during minimum at 1 AU. Our result suppo neighboring individual flow during it and 1 AU.

Keywords Solar wind parameters · Nc analysis · White and colored noise

1 Introduction

Nonlinear time series analysis is a re dynamics of complex real-world syst

LETTER TO THE EDITOR | VOLUME 132, ISSUE 1, P118-119, JULY 2021

Is photodynamic therapy a viable antiviral weapon against COVID-19 in dentistry?

Betsy Joseph, MDS, PhD • C.S. Prasanth, PhD

Published: January 29, 2021 • DOI: https://doi.org/10.1016/j.oooo.2021.01.025 •

To the Editor:

We read the recent article[1] that describes a series of 8 cases of oral manifestations of coronavirus disease 2019 (COVID-19) and its management with great interest. In case 1, photobiomodulation was applied as an adjunct for symptomatic relief of oral lesions. We would like to throw light on the viral load reduction of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) by photoactivation of the photosensitizer (PS) using a specific wavelength through peroxidation that could expand the scope of photodynamic therapy (PDT) in health care during this pandemic.

CoV-2 has posed many challenges for health care professionals. The dental fraternity is the worst-affected sectors during the COVID-19 pandemic. Oral manifestations as

ulcers, blisters, and vesiculobullous lesions[2, 3, 4] are often among the earliest manifestations of COVID-19 viral infections, and treatment modalities such as antifungals, topical or systemic corticosteroids, systemic antibiotics, and systemic acyclovir are used to alleviate these symptoms.

However, there are no studies in dentistry to date that report the use of PDT to manage oral manifestations of COVID-19, although it has been used in dental specialties such as periodontics, endodontics, oral medicine, and oral surgery for management of periodontitis, halitosis, intra-canal disinfection, oral wound healing, herpes labialis, etc. Previous works[5, 6, 7] by the authors of this letter demonstrate the efficacy of PDT in periodontal disease, and it was additionally well tolerated by patients.

Despite PDT's effectiveness against influenza viruses,[8] few studies have proposed the benefits of PDT in lung lesions in COVID-19 cases.[1,9] One of the theories states that photosensitization of viruses induces removal of glycoproteins from the viral surface and the virus thus becomes noninfectious virions, without damage to the membrane.[8] It is interesting to note that PS such as methylene blue (MB), Radachlorin, and 5-amino levulinic acid have shown high antiviral activity against SARS-CoV-2.[10,11] These PS molecules can also act by enticing SARS-CoV-2 virions and attaching to these PS molecules instead of healthy oral tissue[12] or attacking healthy hemoglobin.[1] Additionally, MB without photoactivation has been found to inactivate SARS-CoV-2 in vitro.[13] This makes MB a strong candidate in the management of COVID-19 lesions. Furthermore, MB has been shown to inhibit the SARS-CoV-2 spike protein's protein-protein interaction and its receptor angiotensin-converting enzyme 2 (ACE-2), a critical step.[14]

The distressful symptoms of oral pain, blisters, and vesiculobullous lesions present in few symptomatic oral lesions in COVID-19–positive patients are attributed to derangement in the ACE-2 receptor and the subsequently increased bradykinin activity as part of the kininogen-kallikrein system.[13] This could also be the reason for the dilation of blood vessels and swelling in these cases. Furthermore, it is speculated that an immunologic phenomenon known as cytokine storm occurs in COVID-19 as in other viral diseases like influenza.[15] This is a crucial finding because the ACE-2 receptor is a known receptor for SARS-CoV-2. These receptors are found in oral mucosa, including the tongue and salivary glands' dorsum, and are responsible for many of the oral lesions in COVID-19-positive patients.

Therefore, based on the available scientific evidence, we propose that PDT is a viable weapon for the prevention and treatment of oral manifestations of COVID-19. In addition to alleviating oral pain and discomfort in symptomatic patients, PDT can be used to disinfect the oral cavity, periodontal pockets, and saliva in asymptomatic patients to manage the outbreak. Further in vitro ini

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Photodiagnosis and Photodynamic Therapy

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Can photodynamic therapy be repurposed to treat oral lesions of COVID-19?

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Highlights

- There is an urgent need to develop new treatment modalities to treat oral manifestations of COVID-19 as numerous oral lesions are being reported in patients infected with SARS-CoV-2.
- We hypothesis that photodynamic therapy (PDT) may be repurposed to treat oral lesions of COVID-19and this paper suggests the prospects of using PDT for this purpose.
- PDT can be used not only in symptomatic patients to relieve pain but also in asymptomatic patients' oral cavity, periodontal pocket and saliva.

ScienceDirect

Journal of Atmospheric and Solar-Terrestrial Physics

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Research Paper

The physics of extreme rainfall event: An investigation with multisatellite observations and numerical simulations

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Highlights

- Physics of cloud systems associated with heavy rainfall event in a coastal location; Kerala.
- Combined multi-satellite observation and numerical analysis.
- Precursor of extreme rainfall events.
- Cloud systems with deep convective cores dominated by warm and mixed-phase.
- Orientation of the propagating cloud bands over land and sea.

Abstract

An extreme rainfall event that made major calamity over the Indian peninsula region has been investigated with a focus on the physics of the cloud system as indicated from the multi-satellite observations, ground-based radar, and model forecast experiments. The vertical structure of clouds showed deep convective cores embedded in the stratiform and is dominated by warm and mixed-phase clouds. Model output indicates that moisture convergence was present in two episodes before both heavy rainfall events, and can be used as a precursor for the imminent heavy rainfall. It is the sustenance of high winds and availability of moisture content that contributed to the development of deep convective cloud bands which propagated inland, perpendicular to the coastline. These cloud systems produced deep convective cores with a deep supersaturated layer throughout the middle and upper atmosphere, introduced a significant amount of supercooled liquid water, which facilitated mixed-phase clouds. These cloud liquid drops at supercooled temperatures facilitated the production of more ice hydrometeors on freezing. The rapid growth of hydrometeors through riming and aggregation in the mixed-phase region lead to heavy and sustained precipitation. The sustenance of the system is also due to the enhanced latent heating over Western Ghats that supported low-level moisture convergence in a strongly sheared environment. Documented evidence from this study suggests that the heavy precipitation was a result of the convective cluster as illustrated through satellite observations and numerical simulations.

Introduction

The heavy rainfall often results in flash flooding, poses a risk to life, agriculture and property (Mao et al., 2018 and references therein). Extreme rainfall is responsible for deadly and destructive flash floods causing fatalities in many regions in the world, almost every year (Schumacher, 2017). The heavy rainfall events are more frequent and intense in the warming climate. The descriptive terms used to classify extreme rainfall events on the basis of the amount of surface rainfall vary widely. The rainfall accumulated in 24h in the range 64.5–124.4mm is termed as heavy rainfall, and extremely heavy rainfalls lie in the range 124.5–244.4mm (imd.gov.in↗; Mao et al., 2018). The regional differences in topology and anthropogenic and land use activities are also instrumental factors. A few other factors such as sea surface temperature, enhanced low-level moisture convergence, and associated cloud formation, orography and circulation on regional to large scale also have an impact (Schumacher, 2017; Shailendra Kumar, 2019). Some extreme rainfall events that occurred over the central and eastern United States are nocturnal (Winkler et al., 1988).

Heavy rainfall events are mostly associated either with deep cloud systems or of persistent cloud systems of a different kind (Houze et al., 2017). Such events have a strong bearing on the type of convective cloud systems present and the time of their occurrence. A study of the temporal variability of extreme rainfall events during 1999–2003 using a rain gauge network in the eastern United States (Schumacher and Johnson, 2006) indicated that most of these events are associated with mesoscale convective systems. Notwithstanding its immense importance, such devastating heavy rainfall events are often poorly predicted by numerical models (Fritsch and Carbone, 2004; Novak et al., 2011; Mao et al., 2018). Despite much advancement made in understanding the roles of meteorology and hydrology on flash floods, they possess forecast and detection challenges (https://www.nssl.noaa.gov/education/svrwx101/floods/forecasting/↗; Schumacher, 2017). The role of microphysical processes on the formation and development of precipitation is reported in the recent past by Mao et al. (2018). The accurate forecasting of such torrential precipitation is closely linked also to the accurate physical parameterization of the cloud microphysical processes. This may eventually be responsible for the heating/cooling of the atmosphere and the surface when they occur, and depends on stage of cloud development and decay. A reasonably good understanding of such heavy rainfall events can be obtained only by taking into consideration of the atmospheric processes occurring at various scales such as cloud droplet formation and cloud growth at the microscale, organization of heavily raining storms at various scales, processes occurring at mesoscale to the storm-scale that control the production and efficiency of the rainfall, etc. A better forecast of such ravaging events highly demands the understanding of various factors by combining the insights obtained from a host of observations both *in-situ* and remote sensing methods (ground-based and space-borne) and numerical models of the atmosphere and weather phenomena.

UTTAR PRADESH JOURNAL OF ZOOLOGY

EXPERIMENTAL EVALUATION OF DIETS FOR CULTURE OF A POTENTIAL LIVE FEED, Euplotes Sp. (PROTOZOA, CILIOPHORA)

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Abstract

Ciliate protozoans such as *Euplotes* which are seen among the mass cultures of rotifers have the potential as a live feed for larvae and juveniles of the aquaculture species in hatchery operations. Free living ciliates are potential natural food of many fish larvae because of their smaller size. To obtain the culture of *Euplotes* sp., four diets were tested 1) Microalgae, *Nannochloropsis oculata*, 2) *Isochrysis galbana*, 3) Equal proportion of *N. oculata* and *I. galbana* and 4) Baker's yeast (*Saccharomyces cerevisiae*). The ciliates were inoculated at a concentration of 50 cells mL^{-1}. On day 5, *Euplotes* density reached highest in the groups fed the baker's yeast (14600.00 ± 409.88 cells mL^{-1}) in comparison with the other three media *N. oculata* (933.3 ± 659.29 cells mL^{-1}); *I. galbana* + *N. oculata* (966.67 ± 806.64 cells mL^{-1}) and *I. galbana* (333.33 ± 103.28 cells mL^{-1}). Six days culture is crucial because most of the marine fish larvae start their feeding by 5-7 days of post hatching. It was observed from the results that Baker's yeast is highly significant (P<0.01) diet of *Euplotes* sp. in mass culture.

Keywords: Live feed, Euplotes, aquaculture, microalgae, bakers yeast.

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RESEARCH ARTICLE

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HUMAN-ANIMAL COEXISTENCE: AN ANTHROPOLOGICAL READING OF SELECT CHILDREN'S MOVIES

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Abstract

A paradigm shift has affected all faculties of learning, giving rise to an array of interdisciplinary and multidisciplinary disciplines. The biological and anthropological perspectives offered by the literary texts and its cinematic adaptation opens new doors to anthrozoological perception of the surrounding world. Man is considered to be a social animal and hence in all societies they are seen to coexist with animals in various structures from parasitism and avarice to kinship. This article attempts to explore the concept of anthrozoology in select children's movies with an eye to establishing the fact that even with all instance of technological advances, the bonding of mankind with nature and its associated creatures are indispensable. This realisation can prove instrumental to the well-being of the world paired with an urgent need to understand human-animal interactions as well as the overwhelming effect of humans on the natural resources needed for the survival of all animal species. The close reading of the movies belonging to the genre of children's films portray an exhaustive meaning to human-animal coexistence. These select movies has also been analysed to formulate a cross-cultural understanding of the concept examining how our relationships with animals are mediated by culture, to what extent belief systems induce current animal, human, and environmental social problems and the positive psychology engendered through this understanding of this subject. The prerequisite of biodiversity, ways of preservation and need for sustainability adds to the significance of this study.

Key words: Anthropological perspective, Anthrozoology**,** Children's movies, Human-animal coexistence, Cross-cultural

The history of humankind may be continuously seen as a dynamic dislodging from life in nature to life in urban networks. Man is an animal variety which advanced from the common habitat and, in this way, thinks that it is hard to live without some contact with nature. The difference between animals and human beings have been extensively studied. Humans, from a *biological* perspective are treated as one species among many, but the fables and films generated for children often offer

UTTAR PRADESH JOURNAL OF ZOOLOGY

A CHECKLIST OF FREE-LIVING MARINE ISOPODS OF INDIAN COAST

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Abstract

Isopods are the “marsupial or pouched crustaceans”, coming under the superorder Peracarida. Even though aquatic and free-living isopods contribute the majority to the whole number of isopod species, they are largely neglected in taxonomical field of our country. The number of free-living marine isopods reported from Indian coasts is not even reaching hundred. The present paper is a checklist about the known free-living marine isopods identified from our coasts in all these years. The largest contribution is done by the so called ‘parasitic’ suborder Cymothoida. Other significant suborders present are Sphaeromatidea, Valvifera, Limnoriidea and Asellota.

Keywords: Marine, free-living, isopod, India.

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Research Paper

Whether lockdown can change family adaptability and cohesion: An overview among Kerala population

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ABSTRACT

The purpose of this study was to investigate the influence of different socio demographic variables (age, gender, family type, occupation status and marital status) on family adaptability, cohesion, communication and satisfaction during the period of COVID 19. Each family is different from one another hence it is difficult to find out whether the lockdown due to COVID 19 actually strengthens or weakens the relationships. The descriptive research design was adopted for the study. Sample comprised of 145 people within the age group between 19-80 years from different districts in Kerala. The samples were collected by purposive sampling method. The data collection instruments are Personal data schedule and Family adaptability and cohesion evaluation scale (FACE-IV). There is significant difference in family adaptability and cohesion, family communication and family satisfaction based on age; old aged people show more family adaptability, cohesion, communication and satisfaction. Family adaptability, cohesion and family satisfaction is more found in males during this lockdown period; where as there is no significant difference in family communication based on gender. Family adaptability and cohesion is greater in joint families comparing to nuclear families and no statistically significant relation between family communication and satisfaction based on family type. There is no significant difference between family adaptability and cohesion and family communication based on occupation status, where as family satisfaction is greater for employed. Family adaptability, cohesion and family satisfaction is more found in married people and there is no significant difference in family communication based on marital status. The findings can help families in the planning of a beneficial communication-interaction pattern among the members. In addition, the findings may also provide some information that will show some strategies that people can use to improve their relationship.

Keywords: *Covid-19, Family Adaptability and Cohesion, Family Communication, Family Satisfaction, Lockdown*

Currently, the people all over the globe are experiencing thoughts, emotions and situations that we have never undergone before. The novel corona virus disease that emerged at the end of 2019 shaken the world and began threatening to the lives of millions of people. This virus

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Characterization of classes of graphs with large general position number

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ABSTRACT

Getting inspired by the famous no-three-in-line problem and by the general position subset selection problem from discrete geometry, the same is introduced into graph theory as follows. A set S of vertices in a graph G is a general position set if no element of S lies on a geodesic between any two other elements of S. The cardinality of a largest general position set is the general position number $\mathrm{gp}(G)$ of G. The graphs G of order n with $\mathrm{gp}(G) \in \{2, n, n-1\}$ were already characterized. In this paper, we characterize the classes of all connected graphs of order $n > 4$ with the general position number $n-2$.

KEYWORDS
Diameter; girth; general position set; general position number

AMS SUBJECT CLASSIFICATION
05C12; 05C69

1. Introduction

The general position problem in graphs was introduced by P. Manuel and S. Klavžar [6] as a natural extension of the well-known century old Dudeney's no-three-in-line problem and the general position subset selection problem from discrete geometry [3, 4, 9]. The general position problem in graph theory was introduced in [6] as follows. A set S of vertices in a graph G is a *general position set* if no element of S lies on a geodesic between any two other elements of S. A largest general position set is called a *gp-set* and its size is the *general position number* (*gp*-number, in short), $\mathrm{gp}(G)$, of G.

The same concept was in use two years earlier in [2] under the name *geodetic irredundant sets*. The concept was defined in a different method, see the preliminaries below. In [2] it is proved that for a connected graph of order n, the complete graph of order n is the only graph with the largest general position number n; and $\mathrm{gp}(G) = n-1$ if and only if $G = K_1 + \cup_j m_j K_j$ with $\sum m_j \geq 2$ or $G = K_n - \{e_1, e_2, \ldots, e_k\}$ with $1 \leq k \leq n-2$, where e_i's all are edges in K_n which are incident to a common vertex v. In [6], certain general upper and lower bounds on the *gp*-number are proved. In the same paper it is proved that the general position problem is NP-complete for arbitrary graphs. The *gp*-number for a large class of subgraphs of the infinite grid graph, for the infinite diagonal grid, and for Beneš networks were obtained in the subsequent paper [7]. Anand et al. [1] gives a characterization of general position sets in arbitrary graphs. As a consequence, the *gp*-number of graphs of diameter 2, cographs, graphs with at least one universal vertex, bipartite graphs and their complements were obtained. Subsequently, *gp*-number for the complements of trees, of grids, and of hypercubes were deduced in [1]. Recently, in [5] a sharp lower bound on the *gp*-number is proved for Cartesian products of graphs. In the same paper the *gp*-number for joins of graphs, coronas over graphs, and line graphs of complete graphs are determined. Recent developments on general position number can be seen in [8].

2. Preliminaries

Graphs used in this paper are finite, simple and undirected. The distance $d_G(u, v)$ between u and v is the minimum length of an u, v-path. An u, v-path of minimum length is also called an u, v- *geodesic*. The maximum distance between all pairs of vertices of G is the *diameter*, $\mathrm{diam}(G)$, of G. A subgraph H of a graph G is *isometric subgraph* if $d_H(u, v) = d_G(u, v)$ for all $u, v \in V(H)$. The *interval* $I_G[u, v]$ between vertices u and v of a graph G is the set of vertices that lie on some u, v-geodesic of G. For $S \subseteq V(G)$ we set $I_G[S] = \cup_{u,v \in S} I_G[u, v]$. We may simplify the above notation by omitting the index G whenever G is clear from the context.

A set of vertices $S \subseteq V(G)$ is a *general position set* of G if no three vertices of S lie on a common geodesic in G. A *gp*-set is thus a largest general position set. Call a vertex $v \in T \subseteq V(G)$ to be an *interior vertex* of T, if $v \in I[T - \{v\}]$. Now, T is a general position set if and only if T contains no interior vertices. In this way general position sets were introduced in [2] under the name geodetic irredundant sets. The maximum order of a complete subgraph of a graph G is denoted by $\omega(G)$. Let $\eta(G)$ be the maximum order of an induced complete multipartite subgraph of the complement of G. Finally, for $n \in \mathbb{N}$ we will use the notation $[n] = \{1, \ldots, n\}$.

In this paper, we make use of the following results.

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On the Carathéodory and exchange numbers of geodetic convexity in graphs ☆

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What do these dates mean?

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Abstract

A set of vertices S of a graph G is *geodesically convex* if for every pair of vertices of S, all vertices of all shortest paths joining them also lie in S. The *geodetic convex hull of* S, denoted by $\langle S \rangle$, is the minimum geodesically convex set of G containing S. We say that S is *Carathéodory independent* if $\langle S \rangle \setminus (\bigcup_{a \in S} \langle S \setminus \{a\} \rangle) \neq \emptyset$ and that S is *exchange independent* if $|S| = 1$ or there is $p \in S$ such that $\langle S \setminus \{p\} \rangle \setminus \bigcup_{a \in S \setminus \{p\}} \langle S \setminus \{a\} \rangle \neq \emptyset$. The *Carathéodory number* (*exchange number*) of G is the cardinality of a maximum Carathéodory (exchange) independent set. In this paper, we show that deciding whether a given graph has exchange number at most k is an NP-complete problem. We also present characterizations of the Carathéodory and exchange numbers for some graph classes, like unit interval graphs and powers of cycles, which allow us to determine these parameters in polynomial time.

Previous Next

Keywords

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Fourier Transform Infrared and Chromatographic Fingerprint of Essential Oil from Pogostemon benghalensis (Burm. F.) Kuntze

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Keywords: Pogostemon, Essential oil, Fourier Transformed Infrared Spectroscopy (FTIR), Functional Groups, HPTLC, GC-MS

ABSTRACT

The purpose of the present research work is to investigate the functional group and category of secondary metabolites present in the essential oil (Eo) from *Pogostemon benghalensis* using Fourier transform infrared (FTIR) spectrometry, HPTLC and GC-MS technique. FTIR measures the vibrations of bonds within the functional groups and yields a spectrum that can be considered as biochemical or metabolic fingerprint of the plant product. Using FTIR spectra, it is possible to find out the minor changes of primary and secondary metabolic characteristic functional groups which are responsible for their biological feature of the species. FTIR is a nondestructive, cost effective, user and eco-friendly tool. *Pogostemon benghalensis,* a wild relative of *P. cablin*, the highly utilized and adulterated medicinal herb by the native people for the extraction of essential oil Patchouli. The fresh leaves were subjected to hydro distillation for the extraction of the essential oils and were analyzed using the above techniques. The FTIR spectral lines have shown diverse unique peaks of functional groups. FTIR confirmed the volatile compounds and indicated by their functional groups of the essential oils such as C-H (Alkene), C-H (aromatic) and C=C. Similarly, the analysis proved the presence of alcohols, p-substituted alcohols or phenols, alkanes, alkynes, alkenes, aldehyde, ester, ether, aliphatic amines, carboxylic acids, aromatics, ketones, disulphide, alkyl halides, halogen, and nitro derivatives. The intensity and estimation of predominant volatiles were analysed by HPTLC, which showed 8 peaks with max Rf values ranged from 0.07 to 0.96.

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In vitro Antioxidant Potentiality of Purified Anthocyanin from Floral Petals of Wild Balsam Species

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Keywords: Antioxidants, free radical scavenging, anthocyanin, purification, wild balsam

ABSTRACT

Phenolics are the largest group of phytochemicals ubiquitous in plant species with considerable interest economically. Recently, search of novel polyphenols increasingly becomes an area of intensive pharmacological research due to their multiple bioactive features such as antioxidant, antimicrobial, anti-carcinogenic, anti-viral and anti-inflammatory potentialities. Anthocyanins are flavonoid group of polyphenols, a group predominant in flowers, fruits and vegetables. The flavonoids, perhaps the unique single group of phenolics in foods, comprise a group of over 4200 C_{15} aromatic molecules with multiple structural patterns. The functions of anthocyanins as medicinal have been well-accepted in folk medicine throughout the world. In fact, these molecules are connected to an amazingly broad-based range of health benefits. In this juncture, the aim of this work was to evaluate the antioxidant activities of purified anthocyanin from wild balsam species. Initially, anthocyanin was extracted from floral leaves of wild balsam species and purified by chromatographic techniques. Subsequently, it was subjected to NMR and LC MS analysis. The major fractions identified were hesperidin, dimethoxy antirrhinin and trimethoxy antirrhinin. Further, the anthocyanin extracts were subjected to *in vitro* protocols like 2,2'-azino-bis-3-ethylbenzothiazoline-6-sulphonic acid (ABTS) radical cation, DPPH scavenging assay, ferric reducing antioxidant power (FRAP), beta carotene bleaching assay, metal chelating and H_2O_2 scavenging power.

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Short Communication

Phytoplankton diversity in the upstream region of Achankovil river of Kerala

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Phytoplanktons are the self-feeding organism of the major group of the plaktonic community and a key part of oceans, seas and freshwater ecosystems. Phytoplankton serves as the base of the aquatic food web. The phytoplanktons serve as major component of energy flow in food chain. Water quality and other biotic communities in water control the Phytoplankton diversity and density. Distribution of Phytoplankton and their variation at different zones of water body is affected by physicochemical parameters of water. Study of Phytoplankton provides a relevant and convenient point of focus for research on the mechanism of eutrophication and its adverse effect on aquatic ecosystem (Shinde *et al.*, 2012). The present investigation focused on the excavation of algal diversity of upstream region of a fresh water river Achankovil of Kerala.

The river Achankovil originates from the hills of Achankovil and also known as Achankovilaaru. The river is about 128 kilo metres long and is brimming with flora and fauna on its either bank. The water samples were collected from the upstream of the Achankovil river in forest division, once in a Month, from November to October 2019. Water samples were collected during the morning time. Phytoplanktonic forms were collected by plankton net Number -20 silk bolting cloth. Phytoplankton sampleS were allowed to settle by adding Lugol's Iodine and adding 4% of formalin for the preservation. Macro algae and attached micro algae were collected by manually. Microscopic observation was done by light microscope and algae were identified with the help of Fresh water algal key established by Desikachary (1959), Prescott (1982) and Philipose (1967).

Present research investigations explore the phytoplanktonic diversity of upstream region of Achankovil river. The study revealed that thirty different forms of micro and macro algae were present in the five different sites of study area. The algal groups present were Chlorophyceae, Bacillariophyceae, Cyanophyceae and Euglenophyceae. Chlorophyceae was dominant group comprising twelve different genera over the rest groups and constituted 40% of the total population.The second predominant group was the ten genera belongs Bacillariophyceae with 33.3 %, and seven genera of Cyanophyceae with 23.3 % and least reported was the one genera of Euglenophyceae having 3.3 per cent.

Table 1: Class wise distribution of Phytoplankton genus in Achankovil river

Algal class	Name of algae
Chlorophyceae	Ankistrodesmusfalcatus
	Bulbochaetesp
	Cosmariumobsoletum
	Cosmariummanipurense
	Cosmariummargaritatum
	Gonatozygonaculeatum
	Pediastrum boryanum
	Scenedesmus quadricauda
	Spirogyra sp.
	Staurastrumsp.
	Cholrellasp.
	Micrasterias radians
Bacillariophyceae	Cymbellasp.
	Fragilaria sp
	Naviculapupula
	Naviculasalinarum
	Nitzschiafrustulum
	Nitzschialinearis
	Surirellarobusta
	Tabellariaflocculoa
	Synedra ulna
	Gomphonemasp.
Cyanophyceae	Anabaena spherca
	Lyngbyaarboricola
	Lynbyabirgei
	Spirulina sp.
	Oscillatoria cortiana
	Merismopedia elegans
	Merismopediatenuissima
Euglenophyceae	Euglena sp.

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Assessment of Phytoplankton Diversityin Midstream of Achankovil River during Monsoon and Post Monsoon Seasons

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Abstract

Algae are organisms with size ranging from microscopic to hundred feet to large seaweeds. The present study focuseson the algal diversity in Pandalam area of Achankovil river, Kerala, India. Pilgrims of Sabarimala uses the water of Achankovil River for various sanitary purposes and there by waste dump in river may cause water pollution and related ecological problems.Water samples werecollected during the monsoon and post monsoon seasons in the early morning before increasing the intensity of sunlight. Phytoplanktonic forms were collected using plankton net.The analysis of physico-chemical parameters such as temperature, pH, salinity and productivity show a slight variation in mean value during the two seasons. The study reveals presence of forty one algal genera belongings to four algal classes.Theresults showed that parameters such as dissolved oxygen, carbon dioxide, total hardness and silicate indicatevariations with relation to seasons.The variations and distribution of phytoplankton and changes in physico-chemical parameters in freshwater helps to know the water quality of the river.

Keywords

Algal Diversity; Aquatic Ecosystem; Biodiversity; River Ecology

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Bioactivity and Apoptotic Efficacy of the Purified Terpenoid Extract from the Moss Brachythecium Buchananii (Hook.) A. Jaeger against MG 63 Cells

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Keywords: Anticancer, apoptosis, caspase, DNA fragmentation, moss, terpenoid

ABSTRACT

Bryophytes are primitive non vascular plants. A little is explored regarding the medicinal effects of bryophytes on carcinoma. This study investigated the biological effects of purified terpenoids from *Brachythecium buchananii* on selected cell lines such as HeLa, MDAMB-231 and MG63 human osteosarcoma cells and also elucidating the regulatory signaling pathways underlying the effects of terpenoids towards caspase cascade and the antioxidant enzyme system. The cell lines were treated with various concentrations of purified terpenoid extracts interms of evaluating viability (MTT assay). Interestingly, MG63 cell lines showed poor viability as compared to other ongo cells and was subjected to further molecular evaluations. Migration and invasion assay results using wound-healing and transwell assays, respectively reveal the pro-antimetastatic potential of the purified terpenoids from the moss. The flow cytometry study substantiated terpenoid induced apoptosis in MG63 cells. Cell cycle analysis revealed the significant increase in the number of cells arrested at the S growth phase. Terpenoid extract also displayed DNA fragmentation in the cells. Western blot analysis revealed the down regulation of the anti-apoptotic proteins Bcl-2, pro-caspase 3 and over expression of the pro-apoptotic protein Bax. In addition, the caspase cascade profile of the terpenoid extract substantiated their efficacy in tumour inhibition. Thus, the overall results confirmed the biological features of terpenoid induced apoptosis in the MG63 cells.

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Microbicidal Potentialities of Essential Oil from *Pogostemon benghalensis* (Burm.F.) Kuntze. and *P. cablin* (Blanco) Benth.

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Keywords
Pogostemon benghalensis; GC-MS; *Escherichia coli;* MIC; Potassium ions.

ABSTRACT: The essential oils from *Pogostemon benghalen*sis and *P. cablin* were isolated and the major compounds were identified by GC-MS technique. The antimicrobial potentials of essential oils from *Pogostemon benghalensis* and *P. cablin* were tested against clinically important microorganisms. Gram negative bacteria includes *Escherichia coli* (ATCC 25922), *Salmonella typhimurium* (ATCC 13311), *Pseudomonas aeruginosa* (ATCC 85327) and *Klebsiella pneumoniae* (ATCC10031) and Gram positive bacteria include *Staphylococcus aureus* (ATCC 25923), *Staphylococcus epidermidis* (ATCC 12228), *Bacillus subtilis* (DSMZ 1971), *Bacillus cereus* (ATCC 11778) were used for the present study. Also *Aspergillus niger* (ATCC 16404) and *Candida albicans* (ATCC 10231) were used as the fungal strains. The minimum inhibitory concentration (MIC), minimum killing concentration (MKC), leakage of potassium ions, release of 260 nm absorbing materials was analysed. 41 and 36 fractions were identified from the essential oils of *Pogostemon benghalensis* and *P. cablin* respectively. The result indicated that oils have significant antimicrobial properties against the selected strains of microorganisms. In conclusion the essential oils of *Pogostemon benghalensis* and *P. cablin* can be used as a natural source for antimicrobial agents and could be used for application in pharmaceutical and food industries.

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INTRODUCTION

Aromatic plant species and their essential oils (Eos) have been used from the beginning of human civilization for various purposes. These oils are mainly used for flavouring the food and beverage [1]. The Eos is commonly in liquid form, clear and light coloured complex and volatile. The Eos are characterised by its strong odour among the secondary metabolites [2]. Eos is ubiquitous in buds, flower, leaves, stem, seed, root or trichomes of aromatic plants [3]. Plants have been traditionally used as a folk medicine to extend the shelf life of foods, to inhibit the action of microorganism, to treat various diseases. The Eos is used from the prehistoric times as antimicrobial, antiseptic and for other therapeutic purposes by the indigenous peoples [4]. From the study of the WHO, approximately 80% of the world population, mostly in developing countries, still relies on herbals and their extracts for primary health needs [5]. The Eos and other secondary metabolites present in the plants are responsible for its medicinal properties. Eos is proven for its antimicrobial, antiviral, and antioxidants activities [6]. Also, Eos are employed as an additive in antibacterial agents and proved with high efficacy to be safe [7]. Antibiotics are commonly and widely used for many bacterial and fungal infections. From the time period of the invention of antibiotics these chemotherapeutics are used to eradicate many diseases. However, the uncontrolled and over dosage of these antibiotics leads to the emergence and dissemination of multi drug resistant strains in several microorganisms [8]. Such multi drug resistant strains of *Escherichia coli* and *Klebsiella pneumoniae* had isolated from community acquired infections [9]. Many pathogenic microorganisms which infect human being have become a primary constraint in terms of economic

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Algal diversity and physio chemical qualities of achankovil river ir monsoon seasons

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Abstract

Present research focuses the exploration of the biodiversity of micro and macro algae ofAchankovil river during monsoon seaso The, water samples were collected during pre-monsoon, monsoon and post-monsoon seasons. Samples were collected from th upstream, downstream and midstream regions of the river. The results showed that seventy three types of algae belongs to four major algal class such as Chlorophyceae, Bacillariophyceae, Cyanophyceae and Euglenophyceae were recorded. The algal typ include twenty eight Chlorophycian, twenty six Bacillariophycian classes, the remaining sixteen genera belongs to Cyanophycea three Euglenophyceae classes. The physio chemical parameters such as temperature, pH, dissolved oxygen and CO_2 content v indicated at optimum values. Nitrate, phosphate and silicate shows variation from the river water ranges. The presence of specie such as Euglena, Scenedesmus, Navicula and Nitzschia indicates the river water is polluted.

Keywords

Algal diversity, Physiochemical features, Achankovil river, Monsoon seasons.

ANTI-INFLAMMATORY POTENTIAL OF ESSENTIAL OIL FROM POGOSTEMON BENGHALENSIS (BURM.F.) KUNTZE. USING ANIMAL MODELS

View Abstract (https://www.sciensage.info/index.php/JASR/article/view/561)

pdf (https://www.sciensage.info/index.php/JASR/article/view/561/180)

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Abstract

Aromatic herbals are economically important as spices, flavor, crude essential oil and also for other therapeutic uses. The essential oils (Eos) continue to rise as a commodity and indirectly a range of beauty care and aromatherapy products. Pogostemon benghalensis (Burm.F.) Kuntze., a close relative of patchouli is a bushy herb of Lamiaceae family. The leaves are substituted as the source for essential oils which imparts the therapeutic properties to cure many health related issues among the human beings. Native people use the decoctions of this wild species for curing many skin related issues but not validated scientifically. In this scenario, the present study was undertaken to extract the Eos from Pogostemon benghalensis, fractionated by GC-MS and to evaluate the anti-inflammatory potentials using animal models. Anti-nociceptive role of Eos were analyzed in rats using the acetic acid-induced writhing test. Anti-inflammatory effects of Eos in four different concentrations, namely 100, 200, 300 and 500 mg/kg, were accessed in animal models representing various changes connected with inflammation such as carrageenan-induced paw edema, xylene induced ear edema, cotton pellet-induced granuloma and ethanol induced ulcer. No sign of toxicity was noticed in the Eos

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Customer Service in Commercial Banks in Kerala: An Analytical Study

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Abstract

Excellent customer service requires competent, swift and gracious service, building bur interactions with customers, solution to grievances speedily and responses to customers' conce on time. Excellent customer service is the paramount way to retain the existing customers ar new customers, thus guaranteeing the long-term triumph. Banks must endeavour to attract ne customers and to retain existing customers. Providing quality customer service is one convinc way of accomplishing this. Considerate customers' desires and satisfy them is extremely critica superior method and quality service plan is also significant facet of customer service. In th article an attempt has been done to articulate the existing level of customer service quali practices being followed by the Commercial banks in Kerala. Primary data was collected throug structured questionnaire .The results points out that majority of bank customers frequently visi branch counter. E-mail is the best source of information about the new products and servic offered to customers. Customer redressal grievance cell is the best mode of complai registration against poor banking services. Insufficient front office staff is the major impedimen towards the service quality of banks.

Keywords: Customer service, Quality, Customers.

Introduction

Customer service is an imperative facet of any organisation especially a service entity like bani The term Customer Service points out the assistance and support provided by a business to thos people who buy or use its products or services. The initiative of customer service has gaine consideration in the recent years. Eminence services must be every organization's mo important goal, as well as its central market strategy, because it is the key to endurance for th next decade. Enhanced service will augment sales and market shares as well as trim dow outlays. Better customer service leads to customer satisfaction.

At present, Banking institutions are functioning in the aggressive and competing in th tumultuous environment, as such, every bank should adopt new techniques and strategies so as t catch the fancy of budding customers and maintain existing customers. This measure is possibleonly through the loyalty and satisfaction of the customers. One of the supreme input t enduring business triumph of commercial banks can be summed up in three simple words Quality Customer Service.The word quality can be viewed from various dimensions as th concept cannot be defined in a single way. Quality from the point of view of service provide refers to setting up of standards or specifications in the manufacturing process as well as in th output which is totally objective and technical in nature. On the other hand from customers point of view, service quality occurs only when the service firm provides services to th specifications that satisfy their needs.

Quality Customer Service is the brand of banking industry. It is a sign of the overall efficacy of bank as an organ encircling its structural and serviceable warmth to the environment, employee and customers. A pleased customer is the best banking business strategy we can adopt Customer service would therefore provision of banking services in accordance with the needs o the account holders of the bank and rendering them in a manner so as to satisfy them.

Objectives

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PLAN OUTLAYS AND EXPENDITURE ON EDUCATION IN KERALA

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Abstract

Governments have augmented investments in education to improve human capital. Rapid explosion of education in the post-independence period in terms of student enrolments, number of institutions and teachers is also reflected in the growth of public expenditure on education. In spite of laudable achievements in this sector, higher education in Kerala requires careful attention and improvement. The 13th Five-Year Plan has marked education as one of the main thrust areas for State interventions clearly pointing to the importance and modern-day requirements of education. An attempt has thus been made to analyse the plan outlay for and expenditure on education by the state.

Keywords: **Education, outlay, expenditure, higher education, technical education**

Introduction

Education has always attracted the interests of policy makers. Governments have augmented investments in education to improve human capital. Independent India recognised the importance of education from the very beginning and it is evident from the high priority accorded for education in the five-year plans. The National Policy on Education 1968, noted education as a 'crucial investment' (National Policy on education, 1986).

Rapid explosion of education in the post-independence period in terms of student enrolments, number of institutions and teachers is also reflected in the growth of public expenditure on education.

Kerala is the first state to have achieved universal literacy. It is to be noted that the educational system in Kerala has developed mainly through institutions that are owned or aided by the Government. The state has also been able to achieve gender equity in enrolment to a large extent. Education in Kerala is inclusive and accessible to all the sections of population. The dropout rate

TAX SYSTEM LEAKAGE IN INDIA

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Abstract

The loss of income or revenue caused by capitalizing the loopholes available in the financial regime of a state is called tax leakage. Tax leakage and the incapability of timely recognitionof non-compliance practices are the major challenges being faced by the economy.This paper aims to throw some light on the reasons that cause tax leakage and the measures to plug out the leakages.The quantum of tax leakage is such that it can even set off the lion share of the primary account. Tax leakage disintegrates the financial self-reliance. Tax leakage is perceived to be caused by the incapability and inefficiency of tax administration prevailing in a country. Closing the loopholes would be a game changer in the revenue and efficient tax collection mechanism would pave the way for development of the economy.

Key words Tax Leakage. Financial Mismanagement

Introduction

The government's public expenditure can be broadly segregated into capital and revenue expenditure. Capital expenditure is the long term commitments and investments while revenue expenditure is needed to the day to day operation of the government. Entities purposefully conceal the real taxable amount which translates into tax leakage for the government. Tax leakage worsen the physical condition of the state but government can better control this issue. It includes non compliance practices, corruptions, duplicating registrations, undercasting sales, entering wrong input tax credits etc. In certain cases the auditors fail to identify the same.

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A study on Government Borrowings (India) from Central bank (RBI) and its Effect on Private Investments

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Abstract

Reserve Bank of India (RBI), the central bank of the nation plays a multifarious role by executing multiple functions. As a banker to government, RBI maintains government's accounts, receive payments into and make payments out of these accounts and also helps to raise money from the public by issuing bonds and government-approved securities. At present, government debt, including market borrowings, is also managed by RBI. Like a usual customer, government can also borrow money directly from the central bank and these borrowed funds are used to finance government expenditures. In addition to the central government, at present RBI acts as banker to all the state governments in India (including Union Territory of Puducherry), except Sikkim. The main objective of the present study is to understand the role of RBI in management of Govt borrowings and also discuss how the government borrowings affects private investments. The study is descriptive in nature. Information needed for the present study were obtained from secondary sources.

Keywords: Reserve Bank of India (RBI), Government borrowings, Private investments.

Introduction

In order to meet various financial requirements under the fiscal policy, like every individuals and business organisations, government also seek financial assistance from internal as well as external sources. In the Indian context, government's borrowings from their own central bank that is Reserve Bank of India (RBI) is most prominent. The developing country like India, RBI which controls whole money supply and it act as a debt manager and banker to the government. Even so there are so many criticisms arises regarding government's borrowings from central bank and its crowding out effect on private investment. The major uprouring censure is 'the huge government borrowings from central bank is adversely affect the money supply and growth of

केरलज्योति

केरल हिंदी प्रचार सभा
की मुख पत्रिका
(केरल हिंदी विद्यालय को
विश्वविद्यालय से मान्यता)

केरलज्योति

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अनुक्रमणिका

मुखचित्र : स्व. मृदुला सिन्हा

आधुनिक हिंदी काव्य नाटक : एक परिचयात्मक प्रस्तुति

डॉ. राजेषकुमार.आर

काव्य नाटक अपने नाम के अनुरूप ही ऐसी विधा है, जिसमें काव्य और नाटक दोनों विधाओं का महत्वपूर्ण तत्व निहित है। इसमें काव्य और नाटक दोनों को सत्ता के विलय एवं बाह्य परिवेश और वागर्थ का अनुकरण मिलता है। कम घटनाऐं, संघर्ष, तीव्र भावात्मक आवेश, गरिमामय भाषा और उदात्तता इसकी विशेषताएं है। इसमें में अधिक घटनाओं का कोई स्थान नहीं होता। घटनाऐं कम होने की स्थिति में भी कथा का विकास संभव है। काव्य नाटक की कथा में ऐसी घटनाओं का महत्वपूर्ण स्थान है, जो द्वन्द्व या अंतर्द्वंद्व उत्पन्न करती है। साहित्य की अन्य विधाओं की तरह काव्य नाटक का संबंध समाज से है। समाज अपने विशिष्ट संदर्भ की संपूर्णता के साथ काव्य नाटक में व्यक्त होता है।

रामकथा पर आधारित काव्य नाटकों में नरेश मेहत्ता कृत 'संशय की एक रात', 'प्रवाद पर्व', भारत भूषण अग्रवाल द्वारा रचित 'अग्निलीक', नरेंद्रदेव पांडेय कृत 'शवरी', चंद्रशेखर कृत 'शिव धुनुष' आदि विख्यात हैं। इनमें नरेश मेहत्ता कृत 'संशय की एक रात' तथा 'प्रवद पर्व' विशेष महत्वपूर्ण माना है। इनकी समस्या मानव सभ्यता के सम्मुख प्रस्तुत युद्ध की समस्या है। राम कथा मूलतः अयोध्या के राज परिवार की कथा है। इस परिवार के सदस्यों की भावनाऐं, कार्य पद्धतियाँ और अभिव्यक्तियाँ सामान्य भारतीय परिवार के सदस्यों की संवेदनाओं से अलग नहीं है। यही राम कथा की सामाजिक अर्थवत्ता मंथन भी है और विस्तृत भी। यही समस्या किसी न किसी भाँति चंद्रशेखर कृत 'शिव धनुष' और नरेंद्र देव पांडेय कृत 'शवरी' में भी उठाई गई है। 'संशय की एक रात' के राम के समान ही 'शिवधनुष' के राम भी युद्ध को कर्तव्य या अकर्तव्य स्वीकारने के द्वन्द्व से जाते है। राम युद्धकामी नहीं है, वह समस्याओं का समाधान शांतिपूर्वक करना चाहते है। 'शिवधनुष' के राम अपने सभी संशय शिवत्व के समक्ष विसर्जित कर देते है। भारतभूषण अग्रवाल कृत काव्य नाटक 'अग्निलीक' रामकथा के एक महत्वपूर्ण कथांश को आधार बनाकर लिखा गया है। यह कथांश सीता परित्याग से जुड़ा हुआ है। 'अग्नियीक' के रचनाकार की दृष्टि में सीता की व्यथा ऐसी सामान्य भारतीय नारी की व्यथा है,जिसे घर से निकाल दिया जाता है। मर्यादा या धर्मपालन का कीर्तिचक्र निर्मित करके सीता की वेदना को सही परिप्रेक्ष्य में प्रस्तुत नहीं किया जाता।

नरेंद्र देव पांडेय कृत 'शवरी' में राम की दंडकारण यात्रा को कवि एक सांस्कृतिक अभियान का अंग मानता है। राम-रावण का संघर्ष देव-दानव के संघर्ष के रूप में प्रस्तुत किया गया है। लेखक के अनुसार शबरी दलित जाति की सदस्य थी, समाज ने उसे प्रताडित किया था, परिवार ने उसे उपेक्षा दी थी। जाति से नीच तथा नारी होने के कारण उसकी व्यथा असीमित थी। शबरी नारी को स्वेच्छा से जीने के अधिकार की माँग करती है। नारी को मात्र भोग्य समझने वाले समाज के प्रति वह विद्रोह करती है।

महाभारत से संबंधित काव्य नाटकों में धर्मवीर भारती कृत 'अंधा युग', डॉ.विनय का 'एक प्रश्न मृत्यु', नरेश मेहता कृत 'महाप्रस्थान', विनोद रस्तोगी द्वारा रचित 'सूतपुत्र' आदि विख्यात माना जाता है। 'अंधा युग' में युद्ध का प्रभाव और मानव के भविशय संबंधी चिंतन केंद्र में है तो 'एक मृत्यु' में नैतिकता-अनैतिकता और बहुपतित्व की समस्या केंद्र में है। 'महाप्रस्थान' में समस्याओं को अनासक्ति के धरातल पर प्रस्तुत कर के समझने और उनका समाधान

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Effect of cobalt doping on antimicrobial, antioxidant and photocatalytic activities of CuO nanoparticles

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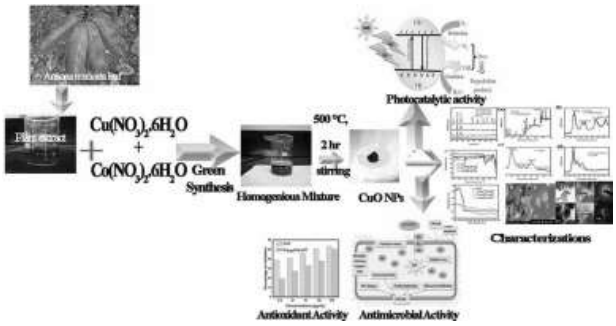
Highlights

- $Cu_{1-x}Co_xO$ (x=0, 0.03, 0.05 & 0.07) nanoparticles was prepared as green route using *Annona Muricata* leaf extract.
- Co doped CuO nanoparticles have monoclinic crystal structure with Cu^{2+} oxidation state and visible light active bandgap.
- Morphology and elemental composition are studied by HR-TEM, SEM and EDX.
- The synthesized nanoparticles possess excellent photocatalytic, antimicrobial and antioxidant activities.

Abstract

Copper oxide nanoparticles doped with 3%, 5%, and 7% cobalt have been prepared via the green method using *Annona muricata* leaf extract to find their antimicrobial, antioxidant and photocatalytic activities. The synthesized nanoparticles was analysed by XRD, FTIR, XPS, EDX, SAED, HRTEM, SEM and UV–Visible techniques. XRD pattern indicate all nanoparticles had single-phase monoclinic structure. Functional groups present in the samples were confirmed by FTIR analysis. The incorporation of Co^{2+} ions into CuO lattice were identified by XPS analysis. Morphological changes of nanoparticles were confirmed by SEM and HRTEM micrograph. Chemical composition of elements were confirmed by EDX spectra. Antimicrobial efficiency of pure and cobalt doped CuO nanoparticles was identified by their zone of inhibition of bacterial and antifungal strains. Moreover, the green synthesized CuO nanoparticles have considerable antioxidant action. Further, the photocatalytic performance of pure and cobalt doped CuO nanoparticles was done by the degradation of methylene blue.

Graphical abstract



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Introduction

Due to the low efficiency of available antibiotics, the rapid emergence of multidrug-resistant microbial strains that cause diseases and infections is now a challenging problem for all living organisms and public health [1]. Presently, antimicrobial resistance is a universal threat due to ineffectiveness of standard treatments, which results in prolonged illness and a greater risk of death [2]. These increases in microbial resistance to drug therapy demands greater attention from researchers in order to discover new antibiotics that are low in cost and high in efficiency [3]. The nanostructured rare earth and semiconductor materials like ZrO [4], ZnO [5], CuO [6], TiO_2 [7] and SnO_2 [8] etc., act as antimicrobial agents due to their high efficiency, high microbial membrane reactivity, low cost, ease of synthesis, remarkable visible light active band gap and large surface to volume ratio [9]. Among these, CuO is an important p-type semiconducting nanomaterial with a narrow band gap of 1.7 eV that is extensively used in a wide range of applications such as superconductors, solar cells, gas sensors, catalytic and biomedical fields [10]. The structural, optical, electrical and magnetic properties of nanoparticles were modified by transition metal doping and are applied in antimicrobial, photocatalytic, magnetoelectronic, nanoelectronics and spintronic devices [11]. Several studies have been reported on the changes associated with the doping of transition metals such as Ni, Fe, Co, Zn and Mn [12]. Among various metal oxides, cobalt is chosen as the best dopant due to similar ionic radii, large surface area and high chemical reactivity to create more active sites for reduction reactions [13]. Doping changes their properties by altering the overall characteristics of the material and causing lattice defects on the surface by controlling interfacial charge transfer via defects sites in CuO nanoparticles doped with cobalt [15]. The impurities interrupt defects centres and contribute electron-hole charge recombination due to their proper p-d orbital interaction, which modifies their electrical, optical and surface properties [16].

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In Press, Corrected Proof What's this?

On monophonic position sets in graphs

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Abstract

The general position problem in graph theory asks for the largest set S of vertices of a graph G such that no shortest path of G contains more than two vertices of S. In this paper we consider a variant of the general position problem called the *monophonic position problem*, obtained by replacing 'shortest path' by 'induced path'. We prove some basic properties and bounds for the monophonic position number of a graph and determine the monophonic position number of some graph families, including unicyclic graphs, complements of bipartite graphs and split graphs. We show that the monophonic position number of triangle-free graphs is bounded above by the independence number. We present realisation results for the general position number, monophonic position number and monophonic hull number. Finally we discuss the complexity of the monophonic position problem.

Keywords

General position set; General position number; Monophonic position set; Monophonic position number

1. Introduction

In 1900 Dudeney, famous for his mathematical puzzles, posed the following question[1]: what is the largest number of pawns that can be placed on an $n \times n$ chessboard such that no three pawns are on a straight line? This problem was generalised to the setting of graph theory independently at least three times in[2], [3], [4] as follows: a set of vertices S in a graph G is in *general position* if no shortest path of G contains more than two vertices of S. The problem then consists of finding the largest set of vertices in general position for a given graph G. This has been shown to be an NP-complete problem[4]. The general position problem has been the subject of intensive research; for some recent developments see[5], [6], [7], [8], [9], [10].

Some interesting variants of the general position problem have been considered in the literature. In[11] the authors [illegible] position problem using the *Steiner distance* instead of the normal graph distance. In[12] the authors set a limit on the length of the shortest paths considered. For a fixed integer d, they define a set S of vertices of

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Research Articles

Synthesis, characterization, photocatalytic activity, DNA interaction and antimicrobial studies of some lanthanide(III) complexes with a tridentate Schiff base ligand

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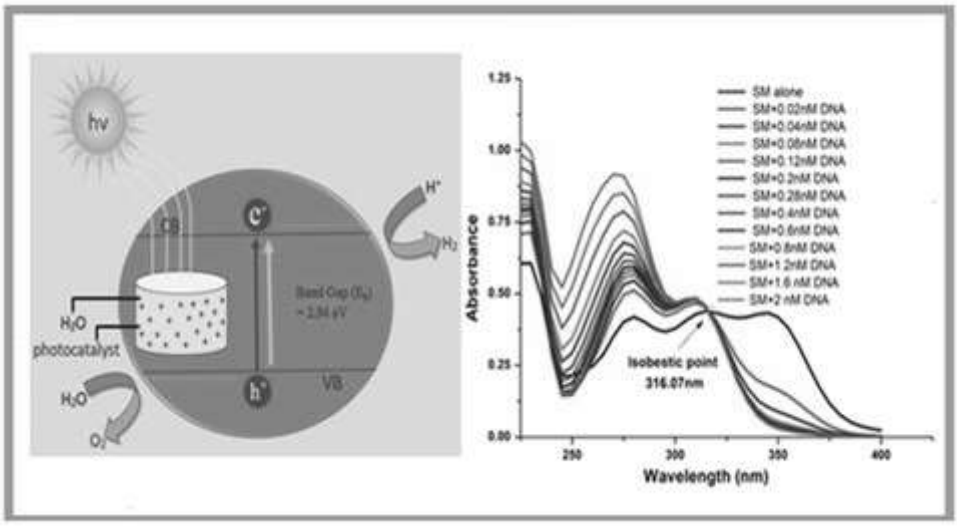
Abstract

Lanthanide complexes of Sm(III), Nd(III), and Dy(III) with a Schiff base ligand, (potassium2-((4-hydroxy-3-methoxybenzylidene)amino)acetate, derived from condensation of 4-hydroxy-3-methoxybenzaldehyde and 2-aminoethanoic acid were synthesized. The compounds were characterized by elemental analysis, IR, UV–Vis, ^{1}H-NMR, ESI-MS, photoluminescence spectra, thermogravimetric analysis, magnetic

susceptibility, and molar conductivity measurements. No well-defined peaks were observed in X-ray diffractograms of the synthesized complexes, indicating an amorphous nature. The Schiff base ligand is tridentate and coordinated with the metal ion through phenolic oxygen, azomethine nitrogen, and carboxylic oxygen. Thermal properties of the metal complexes were studied using thermogravimetric analysis (TG/DTG) and revealed good thermal stability. The photocatalytic efficiencies of the complexes were explored using solar water-splitting. The optical band gaps (E_g) were measured and found to be 2.94, 2.86, and 2.82 eV for Sm(III), Nd(III), and Dy(III) complexes, respectively. These values indicated the semi-conducting nature of the investigated complexes. At room temperature, samarium and dysprosium complexes showed characteristic luminescence of the central metal ions ascribed to the efficient transfer of energy from the Schiff base ligand to the metal center under excitation at 390 nm. The binding properties of these complexes with calf-thymus DNA (CT-DNA) have been investigated using absorption spectrophotometry and fluorescence studies. The physicochemical properties such as hydrodynamic size, zeta potential, and stability of the DNA/complexes were also investigated. DNA cleavage activities of the compounds were assayed using the Agarose gel electrophoresis method. *In-vitro* antimicrobial activities of the compounds were screened against selected pathogenic strains by Agar well diffusion method.



Keywords: Schiff base lanthanide complexes luminescence photocatalytic efficiency DNA interaction

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Spectral, thermal, structural and DFT studies of new luminescent heterobimetallic MOF of lead and sodium based on diglycolic acid ligand having unusual coordination environment for photodegradation and antibacterial applications

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Highlights

- Single crystals of a new bimetallic MOF of diglycolic acid ligand with different metals such as sodium and lead have been synthesized via the gel-diffusion method.
- The grown crystals were further characterized by FTIR, PXRD, TG-DTG, BET, and Photoluminescence studies.
- DFT studies of the bimetallic MOF show a high electrophilicity index (5.3148 eV) that reveals high biomolecular binding capacity of the molecule.
- The photocatalytic degradation and biological experiment suggests that the grown crystals are found to be an effective material for the degradation of methylene blue and can be used for antimicrobial applications as well.

Abstract

Single crystals of a new bimetallic MOF of diglycolic acid ligand with different metals such as sodium and lead have been synthesized via the gel-diffusion method. The Single crystal X-ray diffraction studies revealed that an unusual

coordination environment arises due to the mutual coordination of both sodium and lead metals. The grown crystals was further characterized by FTIR, PXRD, TG-DTG, BET, and Photoluminescence studies. DFT studies of the bimetallic MOF implies a high electrophilicity index (5.3148 eV) that predicts high biomolecular binding capacity of the molecule. The complex under study has a hardness value of 1.7645 eV, indicating that the material is hard. The simulated PXRD is in good agreement with the experimental PXRD pattern which confirms the structural integrity of crystals within the bulk. The antibacterial activity as well as the degradation property of the material towards methylene blue was also studied in detail. The photocatalytic degradation and biological studies suggest that the grown crystals are found to be an effective material for the degradation of organic pollutant methylene blue and can be used for antimicrobial applications.

Introduction

Methylene blue has a blue color which is commonly used as a therapeutic agent and used as an antimalarial [1], antioxidant [2], and antidepressant drug [3]. Other than all these, methylene blue is used as a vasoconstrictor [4] in patients who are suffering from a medical condition called vasoplegic syndrome which occurs in patients after cardiac surgery. Methylene blue is a thiazonic dye that can exist in different structures by resonating positive charge on nitrogen and sulfur atoms present in its structure. Methylene blue can exist in oxidized as well as in its reduced state. At a reduced state, methylene blue exists as leuco methylene blue (MBH_2^+) which is colourless and stable in an aqueous medium. On the other hand, if it is existing in oxidizing form it has a blue color and will readily be converted into colourless leuco form to attain stability. Methylene blue forms a major component among industrial and hospital effluents due to its high medical as well as therapeutic applicability. Nowadays researchers are using plenty of oxidation processes for the removal of dyes present in aqueous media. Among the degradation methods, researchers are more interested in photodegradation studies due to the reason that photogenerated holes and electrons can easily degrade the toxic ions from an aqueous medium irrespective of their chemical nature.

Metal organic frameworks are three-dimensional coordination polymers formed from inorganic metal nodes with organic counter-ionic parts. Due to the versatility of their isoreticular structure, they find an immense number of applications in catalysis [5], sensing [6], degradation of inorganic as well as organic pollutants [7], non-linear optical activity [8], gas storage [9], sensing of organic and inorganic molecules [10,11], etc. Due to the presence of isoreticular structure, three-dimensional array of ligands, metal nodes, presence of different anionic, and cationic sites and high thermal stability properties, MOF acts as a better candidate for the adsorption of environmental pollutants and also possesses antimicrobial properties.

In this work, we report the synthesis as well as characterization of a heterobimetallic MOF (abbreviated as PDGA) formed from lead and sodium with diglycolic acid ligand having an unusual coordination environment. Diglycolic acid (abbreviated as DGA) is a symmetric, aliphatic, dibasic acid which is colourless and odourless in nature. DGA is an oxygen-bonded acid that is stronger than ethanoic acid but weaker than other aliphatic acids [12]. It is water soluble without any further chemical change. Nowadays diglycolic acid functionalized materials are used for the extraction of rare earths [13], adsorption of heavy metals such as Ce^{3+} and Nd^{3+} from water medium [14], and for the fluorescent detection of heavy metal ions [15]. Metal salts used for the synthesis of MOF contains lead and sodium are water soluble, reactive and have wide range of applications. Lead is a major component in the automobile industry for the manufacture of storage batteries [16] and is used further for the synthesis of cable sheathing [17], ammunition [18], pigments [19], lead crystal glass [20] and in some solders [21]. The sodium finds applications in biological as well as industrial fields. Sodium is an essential metal for the transport of water and nutrients across cell membranes. Sodium–Potassium pumps [22] present in the membranes of cell organelle do this function by maintaining specific concentrations of sodium inside and outside the cells. Other than this, sodium is used as a heat exchanger in nuclear reactors [23]. Sodium vapours used in street lights [24] impart them a yellow color. It is used for the synthesis of sodium salts [25]. In this work, the practical applicability of the grown crystal PDGA as a photocatalyst for the

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Hydrogen bond mediated turn-on sensor: Ultra-sensitive and label free barium-MOF for probing malathion an organophosphate pesticide

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Highlights

- Single crystals of oxydiacetic acid and Barium metal was grown through gel diffusion.
- SXRD analysis revealed the presence of a three -dimensional structure and crystallizes in orthorhombic system.
- The material showed fluorescence enhancement in the presence of malathion.
- The presence of hydrogen bonding between the uncoordinated functional groups of the ligand present in the crystal and the Malathion results in the fluorescence enhancement.
- A reusable aqueous phase turn-on luminescent sensor for the sensitive detection of malathion with appreciable efficiency.

Abstract

The recent trend in the agricultural field mainly focuses on the production of products with good yield by using potent and highly poisonous pesticides without considering their severe hazardous side effects. These materials are present in the soil, water, and air in trace amounts. Therefore, continuous monitoring of organophosphate (OPs) pesticides is essential from a human health perspective because of their unregulated use. In this study, we describe fluorescence

enhancement sensing for the selective quantification of OPs in aqueous media. For this, single crystals of oxydiacetic acid functionalized barium metal; $[Ba(C_4H_4O_5)(H_2O)]_n$ was developed through gel diffusion technique at room temperature. The crystals grown were found to be an effective turn-on luminescent probe in an aqueous medium for the sensing of malathion; one of the widely used pesticide in the agriculture field. The techniques such as Single Crystal X-ray diffraction, FT-IR, UV-Visible Spectroscopy, TG/DTG, photoluminescent spectroscopy, etc. were used for the characterization of these crystals. The sensing experiments clearly showed that the synthesized material suspended in water can sense malathion in aqueous media with a detection limit of 10.6676 μM/L. From the Benesi-Hildebrand plot, it is clear that there exists a binding interaction between the sensor and the pesticide which is in 1:1 stoichiometry. The PXRD pattern clearly suggests that the material is intact and there is no change in its peak position, as well as no new peaks, has emerged after the sensing experiments. The FT-IR spectra taken after the sensing experiments show peak broadening and peak shift thereby indicating the evidence of hydrogen bonding interactions between electron-withdrawing groups of OPs and electron-rich open metal sites or organic ligand molecules of MOFs. Interestingly, the material retained its sensing ability even after the third cycle of sensing experiments.

Introduction

Nowadays, an increase in the demand for agricultural products has become a challenge for humankind due to the rapid growth of population and economic development [1]. This challenge results in an appreciable change in agricultural productivity by introducing hybrid and genetically modified seeds, advanced agricultural strategies and tools, proper water management systems, utilization of potent pesticides, etc. [2]. Pesticides became an inevitable component in agriculture because approximately 33% of global agricultural production depends on such pesticides. The farmers are forced to use pesticides excessively for attaining good quality agricultural products with high yields. Environmental Protection Agency (EPA) defines pesticides as a group of chemical substances which prevent, reduce or destroy the progression of unwanted plants and pests without destroying the crops [3]. The most commonly used pesticides are organophosphorus compounds (OPs). Besides the various applications in agricultural production, OPs are responsible for several adverse effects on animals. The presence of waste OPs in water, air, soil, and also in fruits, vegetables, crops, etc. was detected in residual quantities, becoming a serious threat to both environment and human life [4]. OPs are highly toxic and their presence in the human body causes cancer, infertility in men, cardiovascular diseases, neurological issues, headache, asthma, immunotoxicity, dizziness, etc. [5]. Several conventional methods such as gas chromatography (GC) [6], mass spectrometry [7], gas chromatography coupled with mass spectrometry (GCMS) [8], high performance liquid chromatography(HPLC) [9], molecular imprinting [10], capillary electrophoresis [11], immunoassays and enzyme-linked immune sorbent assay (ELISA) [12], colorimetric detection [13], fluorescent [14] and chemiluminescence detection [15], etc. are available for identifying the presence of OPs. These methods are found to have some limitations related to the sensitive nature of instruments, time-consuming processes like sample preparation and pretreatments, high analytical costs, etc. [16], [17], [18]. Among the commonly used techniques, fluorescent detection is one of the promising methods for the detection of pesticides like malathion, imidacloprid, chlorpyrifos, parathion, methyl parathion, etc. Recently, malathion is widely used in modern agriculture for pest control and thereby increasing agricultural production. But it is neurotoxic in nature which can suppress the activity of acetylcholinesterase leading to cholinergic syndrome related symptoms. Malathion can easily and effectively adsorb on the lungs, gastrointestinal tract, mucous membranes, and skin. Its excess exposure may cause chest congestion, nausea, unconsciousness, etc. [19,20].

Metal organic frameworks or coordination polymers are an emerging class of compounds consisting of both organic and inorganic counterparts. These are generally formed by the coordination of active sites of the ligand which act as the secondary building units to the metal centers. The extension of the coordination entities results the formation of one-, two- and three-dimensional coordination polymers. Three-dimensional coordination polymers with appreciable porosity are referred as Metal organic frameworks. Recently, metal organic frameworks (MOFs) or porous coordination polymers (CPs) are highly significant due to their variety of properties such as crystalline structure, large surface area,

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DESTINATION IMAGE ON TOURIST SATISFACTION – A BIBLIOMETRIC ANALYSIS

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Abstract:

Purpose: This paper aims to review the body of knowledge on Destination image and its influence on tourist satisfaction. It tries to reveal the significance of studies on destination image which is the basis for tourist decision-making.

Design: The research information for the study was retrieved from the Dimensions database. The data collected are from the time period 2014 to 2022. A total number of 149 papers from different parts of the world were selected for bibliometric evaluation. The research has been done on citation analysis, co-citation analysis, and co-authorship analysis.

Findings: The bibliometric evaluation revealed that China has the largest number of studies done in the field of destination image followed by South Korea. United Kingdom (UK) was placed top for more citations. The year 2021 has the most publications and it has most citations in this field.

Originality/ value: This study figures out the publishing pattern and citation trend of destination image-related studies which is the base for tourist decision-making. As a result, this paper is helpful to upcoming researchers and tourism marketers.

Keywords: Destination image, tourist satisfaction, tourism marketing, bibliometric analysis, VOS viewer, citation analysis.

Introduction:

Bibliometric analysis, which is a scientific method helps in identifying core research works, authors, and their relationship by covering all publications in a particular field. This method aids in analysing the publications in a given area for the purpose of supporting potential researchers. Bibliometric evaluation can be used to track the publication, citation, and co-citation of authors, countries, institutions, etc. Researchers in this field can have an idea about the most cited publications, authors, and countries. This evaluation highlights the strength of publications in any field.

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SMALL BUSINESSES ARE GOING GREEN: HOW MSMES IN INDIA ARE EMBRACING SUSTAINABLE PRACTICES TO MEET THE GROWING DEMAND FOR GREEN CONSUMERISM?

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ABSTRACT
Small businesses play a significant role in India's economy, accounting for over 30% of the country's workforce and contributing significantly to the country's GDP. However, they are also known for their negative impact on the environment due to their lack of resources and knowledge about sustainable practices. With the growing demand for green consumerism, small businesses are now looking towards sustainable practices to reduce their carbon footprint and meet the expectations of eco-conscious consumers. This is a descriptive study that explores how MSMEs in India are embracing sustainable practices to meet the growing demand for green consumerism. It provides a brief account of the importance of sustainable practices for MSMEs, examples of sustainable practices adopted by MSMEs in India, and the challenges and opportunities for MSMEs to embrace sustainable practices.

Keywords: MSMEs, Sustainability, Green consumerism, India, Government initiatives, Sustainable practices

1. INTRODUCTION
India is a country with a rapidly growing economy, and small businesses play a critical role in the country's economic development. According to the Ministry of Micro, Small and Medium Enterprises, At present, the 63 million MSMEs in India account for close to 30 per cent of the gross domestic product (GDP). The sector already contributed to nearly 50 per cent of its exports and in 2022, it has grown by 37 per cent year-on-year (YoY) and employ over 110 million people (MSME Annual Report, 2022). However, small businesses also have a significant impact on the environment due to their consumption of resources, energy, and waste generation. In recent years, there has been a growing demand for green consumerism, and businesses that fail to adopt sustainable practices risk losing out on customers who are willing to pay a premium for eco-friendly products and services. With this in mind, MSMEs in India are now embracing sustainable practices to reduce their carbon footprint and meet the expectations of eco-conscious consumers.

2. THE IMPORTANCE OF SUSTAINABLE PRACTICES FOR MSMES
Small businesses have a significant impact on the environment due to their consumption of resources, energy, and waste generation. As the world is moving towards a sustainable future, small businesses cannot afford to ignore the importance of sustainable practices. In addition to reducing their carbon footprint, sustainable practices can also help small businesses to save money on energy bills, reduce waste disposal costs, and improve their brand image. Moreover, with the rise of green consumerism, businesses that fail to adopt sustainable practices risk losing out on customers who are willing to pay a premium for eco-friendly products and services.

Sustainable practices also offer a range of benefits to MSMEs. Firstly, sustainable practices can help small businesses to reduce their operating costs. For example, adopting energy-efficient practices can significantly reduce energy bills, and using renewable energy can help businesses to

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Phytoplankton Diversity and Physico-Chemical Features of Vamanapuram River, India

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Abstract

This study discusses the analysis of various physical and chemical parameters like water temperature, water pH, light penetration, turbidity, DO, BOD, Primary productivity (Net primary productivity and Gross primary productivity), and nutrient contents (Nitrate, Nitrite, Phosphate, Silicate) along with some of the phytoplankton population collected from different regions (Six stations) of Vamanapuram River were measured from the period of February 2022 to January 2023. The first parameter analyzed was atmospheric temperature, which reported maximum at pre-monsoon. Throughout the year, the study there has prominently the acidic nature of the Vamanapuram River sometimes, except station 6 reported beyond neutrality. While discussing temperature, the pre-monsoon season reported the highest temperature and also less dissolved oxygen content which explained the direct correlation between atmospheric temperature and the dissolution of oxygen in river water. Station 3 has maximum turbidity but yet high GPP because of the low depth of the mentioned river which was also reported in previous studies. The nutrient content was very negligible which explains the oligotrophic situation of the river. This baseline information on the water quality status of the Vamanapuram River will be useful for future ecological assessment and monitoring to conserve this river.

Key words: Nutrient; Chemical parameters; Vamanapuram River; Primary productivity; Gross Primary Productivity.

Introduction

Vamanapuram River which is the longest river in the Trivandrum district having a total length of 88 km and an area of 687.5 km^2, originates from the Chemmungimottai (Elev. = 1717 a.m.s.l) which is situated in the upper slope of the Western Ghats in southern Kerala and finally debouch into the Anjengo lake near Chirayinkeezhu. This river covers 8 panchayats and one municipality having a thick population and all are deadly dependent on the stream. Kalaiparai Ar from Kalakal Mottaigets linked with this river as it traverses a distance of about 7 km. Pennivadi Ar and Ponmudi Ar, two tributaries, join the main river near Kallar. The river flows southwards and a major tributary, Chittar joins the main river near Anapara. The Vamanapuram River flows southwards through Chettachal, Palode, and Choodal and then meanders westwards towards Vamanapuram. The Kilimanoor Ar joins the main river at about 3 km downstream and flows westwards through Ayilam, Attingal, and Chirayinkil and finally, the river drains into the Arabian Sea (Gopal *et al.*, 2013).

Water is the main source of domestic purposes like drinking, bathing, washing, cooking, etc. But eventually because of urban as well as industrial development the usage of water for these activities has increased along with domestic purposes. The quality of water is an important factor for the survival of living organisms and the quality of water is determined by a lot of characteristics including physical, chemical, and microbial factors. But if there is any possibility that there is a correlation

A Study on the Effect of Dietary Fiber on Lipid Metabolism in Rats

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ABSRACT

The effect of dietary fiber in the form of Neutral Detergent Fiber (NDF) from *Coriandrum sativum* (CS NDF) and *Solanum torvum* (STNDF) on lipid metabolism in rats was studied. The rats were fed with synthetic diet containing 10%. NDF. From the study, it was evident that CSNDF and ST NDF significantly reduced the levels of cholesterol, phospholipids and triglycerides in liver, kidney and serum. Lipogenic enzymes including *Glucose 6 phosphate dehydrogenase, HMG CoA reductase* and *malic enzymes* showed significantly decreased activities in the liver of Fibre diet fed rats. Elevated levels of cholic and chenodeoxy cholic acids in the feces in fiber fed rats indicate higher excretion of fecal bile acids. All the results indicate lipid lowering effect of dietary fibers. Among the two fibers, STNDF fed rats exhibited higher lipid lowering effect than CSNDF fed ones.

Key Words :*Coriandrum sativum*, *Solanum torvum,* Dietary fiber, Neutral detergent fiber.

I. INTRODUCTION

Dietary fiber (DF) is principally composed of plant cell walls and other components obtained from the cell walls. Dietary fiber has complex and highly variable composition (Harris, and Ferguson .,1993). Chemically DF is a heterogeneous group of carbohydrate materials (cellulose, hemicellulose, pectin, lignin etc.) with different physicochemical characteristics. Once DF was considered as a physiologically inert component and its contribution to whole body metabolism remained virtually insignificant. But dietary feeding patterns in very diverse societies has suggested an epidemiological link between the consumption of DF and the occurrence or absence of such diseases as colon cancer,

Advances in zooplankton studies- An overview

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Section

Review articles

Abstract

Zooplankton are free swimming animals that have a prominent role in the both fresh water and marine ecosystems. They are considered to be bio indicators and since the existence of zooplankton is more important along with their undeniable role in energy transfer through food chains and biogeochemical cycling. To know about different aspects about zooplankton the care should be taken from the level of collection and further in to their preservation, identification, sorting, enumeration and their analysis through different scientific procedures. Studies about zooplankton is still going on all around the world and there have been a lot of advances made at different aspects related to zooplankton study. A nutshell of field as well as laboratory procedures involving different techniques and instrumentation in zooplankton studies and advancements that have been made and currently followed by the researches are included in this review article.

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BULLETIN OF PURE & APPLIED SCIENCES- ZOOLOGY

Environmental Factors Affecting the Distribution of Selected Free Living Isopods in the Southern Coast of Kerala, India

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Keywords: Isopod, Intertidal, Abiotic factors

ABSTRACT

Intertidal isopods are a group of successfully surviving organisms in the littoral region of the sea. The continuous exposure to human activities and other botic and abiotic stresses can influence their distribution and diversity along the seashore. Air and water temperature, salinity, pH, and presence of nutrients such as silicate, nitrate and phosphate are studied for their influence on some of the selected intertidal isopods found in three different beaches of the southern Kerala. Monthly data was collected for the water samples and four different isopod species found in the intertidal region and

Trichodinid ciliates in two economically important fishes,Rastrelliger kanagurta(Perciformes: Scombridae) andOreochromis mossambicus(Perciformes: Cichlidae) from Kerala, India.

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Section Research Articles

PDF

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Abstract

Trichodinid ciliophoransare one of the main groups of fish parasitescausing damage to skin and gills,often leading to the death of the infested fish andare still a poorly studied group in India.A study was undertaken to assess the infestation and distributionof trichodinids from the skin and gills of two economically important fishesin India, RastrelligerkanagurtaCuvier, 1816and OreochromismossambicusPeters, 1852.Dried slides were prepared from the smears andimpregnated with silver nitrate (2%) and morphometriccharacteristics were madeusing photomicrographs produced from theslides.O. mossambicus was found positive for two species, viz., TrichodinamagnaVan As and Basson, 1989 and ParatrichodinaafricanaKazubski and El-Tantawy, 1986.R. kanagurta was found to be infested with Paratrichodina sp. Lom, 1963. Seasonal variations in the rate of parasite infestation were observed in T. magnaand P. africana from O. mossambicusand these parasites showed anincrease during post-monsoon while a decrease during monsoon. No seasonal variation was observed in Paratrichodinainfestation in R. kanagurta. The infection induced excessive mucus secretion, paleness in gills, and multifocal whitish areas and lesions that probably permitted entry of opportunistic bacteria. The present study reportsthe first record ofa Paratrichodina sp.onR. kanagurtaand T. magnaon O. mossambicus.

License

Language

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केरलज्योति

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वित्तीय सहायता से प्रकाशित)

अनुक्रमणिका

मुखचित्र महान अभिनेता इन्नोसेंट

समकालीन हिंदी कहानियों में तृतीय लिंगी मानवों की समस्यायें

डॉ. राजेष कुमार.आर

"Transgender people have a gender identity or gender expression that differs from the sex that they were assigned at birth "

प्रकृति मे पुरुष और स्त्री के अतिरिक्त एक अन्य वर्ग भी है जो न तो पूरी तरह नर होता है और न नारी। जिसे लोग हिजड़ा या फिर ट्रांसजेंडर के नाम से संबोधित करते है। अक्सर लोगो को इस तृतीय लिंग के विषय मे विशेष जिज्ञासा रहती है। किन्नर समुदाय की स्थिति बहुत ही दयनीय है जिससे समाज एकदम अनभिज्ञ और संवेदनहीन है। इतिहास को अगर हम बात करें तो सन्।871। से पहले भारत के तृतीय लिंगी मानवो को ट्रांसजेंडर का अधिकार मिला हुआ था। सन्।871। में अंग्रेजों ने उन्हे क्रिमिनल ट्राइब्स यानी एक जनजाति को श्रेणी में डाल दिया था।

विश्व में उक्त मानव समुदाय को ट्रांसजेंडर के रूप में मान्यता मिली है। भारत में मुख्य चुनाव आयुक्त टी. एन. शेषन ने 1994 में उन्हे मताधिकार दे दिया था। इसके बाद 15 अप्रैल 2014 को सर्वोच्च न्यायालय के एस. राधाकृष्णन और ए. के. सीकरी ने तीसरे जेंडर को मान्यता देते हुए एक ऐतिहासिक फैसला दिया। तृतीय लिंगी समाज की लम्बे समय से चली आ रही मांग को अदालत ने स्वीकार कर लिया।

हिन्दी साहित्य महामंडल के अनगिनत कथाकार अपने कहानियों एवं उपन्यासों के द्वारा उस समुदाय को समाज की मुख्यधारा में लाने की कोशिश की है। यहाँ उनकी समस्याओं पर केंद्रित कुछ कहानियों की चर्चा की गयी है। समकालीन समय में उक्त समुदाय अपनी समस्याओं से जूझते हुए समाज में अपनी पहचान कायम करने के लिए प्रयासरत है।

'बिंदा महाराज' नई कहानी आंदोलन के दौर की, शिव प्रसाद सिंह द्वारा रचित, एक चरित्र प्रधान कहानी है। प्रस्तुत कहानी में तृतीय लिंग के लिए समाज में जो दयनीय स्थिति है, उसका वर्णन किया गया है बिंदा महाराज कहानी का मुख्य पात्र बिंदा हिजड़ा है। उसके अन्दर मानवीय व्यापकता और संवेदनशील हृदय की गहराई है लेकिन स्त्री-पुरुषेतर होने के कारण उसे उपेक्षित जीवन व्यतीत करना पड़ता है। बिंदा महाराज जैसे तमाम स्त्री पुरुषेतर व्यक्ति इस तरह के उपेक्षित जीवन व्यतीत करते है। किन्नर होने की वजह से बिंदा महाराज बिंदिया संबोधन को ज्यादा पसंद करता है। कहानीकार के शब्दों में 'पतली सा शरीर, छरहरी देह, लाल रंग की चुन और बूटेदार छींट की अधबाँहिया... बिंदिया चलती तो गाँव की गलियों में हंसी, ढिठाई और मीठी चुटकियाँ गिराह बाँधकर चलने लगती'। बिन्दा महराज एक ऐसे हिजड़े की कहानी है जिसके जन्म के बाद उसके माता-पिता चल बसते है और जिसके कारण बिन्दा महराज का जीवन अनेक कठिनाइयों से भर जाता है। वे शरीर से भले ही अपूर्ण हो किंतु उनके मन की भावनाएं, संवेदनाएं तथा अपनों के प्रति प्रेम की भावना किसी आम व्यक्ति की ही भाँति विद्यमान रहती है। बिन्दा महराज अपना सम्पूर्ण प्रेम अपने चचेरे भाई के बेटे करीमा पर न्योछावर कर देते हैं। किंतु अंतत उन्हे उनके ममत्व के बदले अपने चचेरे भाई से अपमानित होना पड़ता है और घर से निकलना पड़ता है।

हिजड़ों पर आधारित एक बड़ी ही महत्वपूर्ण कहानी किरण सिंह की *संज्ञा* है। प्रस्तुत कहानी में संज्ञा के इस रूप में जन्म लेने से उसके माता पिता को बहुत पीड़ा सहन करनी पड़ती है। बड़ी हो रही संज्ञा को समाज से बचाकर पालना और आर्थिक स्थिति को संभालना कठिन हो जाता है और उसकी जिज्ञासाओं को शांत करना बड़ा ही कठिन कार्य है। इसी प्रकार बढ़ती उम्र के साथ - साथ उसके विवाह के प्रश्न भी समाज में खड़े होते है इस कहानी में कहानीकार ने बचपन से लेकर अंत तक संज्ञा के पिता और संज्ञा दोनों द्वारा खुद को समाज की नजरों से बचाए रखने की कोशिश दिखाई देती है।

'हिजडा' कहानी जो कि डॉ. कादंबरी मेहरा द्वारा रचित है, उसमें एक स्त्री रोगिनी विपरीत परिस्थितियों की वजह से नकली हिजड़ा बनकर जीवन व्यतीत करती है। इस

करने में उसे अपने जीवन का शारीरिक अत्याचार भी सहन करना पड़ता है। हिजड़ा कहानी में उस समाज के जीवन के पहलुओं को उभारा गया है। हिजड़ा कहानी द्वारा हमारे समाज पर व्यंग्य करते हुए कहानीकार ने कहा है कि समाज की कुरीतियों जैसे विवाह योग्य, अयोग्यविचार और कन्यापुत्र जीवन में असफल होकर भी कुछ लोग और पुरुष किन्नर जीवन अपनाने पर मजबूर हो जाते हैं। दो पद्मा नामों की कहानी हिजड़ा के संदर्भ में किन्नर जीवन के पहलुओं को उभारा गया है। सोफिया के नेतृत्व में हिजड़ों का समूह एक बलात्कारी गुंडे को नपुंसक बना देते हैं। क्योंकि बलात्कार की शिकार लड़की का पिता चुप रहने में ही अपनी भलाई समझता है। आज के समय में हिजड़ा वर्ग अपनी समस्याओं में जूझते हुए समाज में अपनी पहचान कायम करने के लिए प्रयासरत है।

तृतीय लिंगी लोग समाज का एक हिस्सा है लेकर [illegible] लिंग गतियों से उपेक्षित अवहेलित तथा तिरस्कृत [illegible] माना गया है। तथाकथित समाज ने न लोग अपनी [illegible] से जूझते हुए समाज में अपनी पहचान कायम करने के लिए प्रयासरत है।

न लोग सर्वप्रथम तो किस से जूझ अपने अस्तित्व से लड़ता है, दूसरों से अलग होने की पीड़ा से लड़ता है। निरपराध और गैर साहित्य तथा इस विषय से संबंधित संगोष्ठियों एवं विभिन्न सरकारी प्रयासों द्वारा इस पर [illegible] ध्यान दिया जा रहा है और कोशिश की जा रही है कि यह वर्ग उपहास का-पात्र नहीं बल्कि संवेदना का विषय बने तथा उन्हें सामाजिक तथा सभी मूलभूत अधिकार सही मायनों में प्राप्त हों।

[illegible]
[illegible]

'एक जाति, एक धर्म, एक ईश्वर मानव का'

जाति की पुनर्व्याख्या करते हुए श्रीनारायण गुरु ने [illegible] कविताएँ लिखीं, जिनमें शताब्दियों से जाति के नाम पर उच्च जातियों द्वारा प्रचारित झूठी धारणाओं का खंडन किया गया। इन कविताओं की कुछ पंक्तियाँ लोकप्रिय और प्रामाणिक उक्तियों के रूप में आज भी केरल में लोकप्रिय हैं। सबसे प्रसिद्ध नारा है, 'एक जाति, एक धर्म, एक ईश्वर मानव का' का आदर्श।

गुरु ने 1888 में शिव मंदिर की स्थापना के समय लिखी अपनी कविता या वक्तव्य में जाति भेद, वर्ग विद्वेष आदि के बिना भ्रातृभावना में जीनेवाले एक समाज की कल्पना की थी। 1914 में लिखित जाति निर्णय शीर्षक कविता में उन्होंने स्पष्ट किया कि मानव की केवल एक ही जाति है और वह है मानवता या मनुष्यता। उन्होंने वैज्ञानिक आधार पर यह साबित किया कि सभी मानव जाति एक ही जीव वंश या किस्म के स्तन या योनि से निकलता है, इसलिए मानव-मानव के बीच कोई अंतर नहीं है। उन्होंने तार्किक ढंग से यह सिद्ध किया कि मानव द्वारा बनाई गई ब्राह्मण आदि जातियों वास्तव में होती नहीं। उन्होंने इस कविता में यह स्पष्ट किया है कि मानवता या मनुष्यता ही मानव की वास्तविक जाति है, शेष सारी जातियाँ तो इसका ही टूटा-फूटा रूप है। इन विचारों को सार्थक करने के लिए उन्होंने उपनिषद् और अद्वैत दर्शन का आधार ग्रहण किया और अपनी 'आत्मोपदेश शतक' शीर्षक कविता में बताया कि इस दुनिया के सारे जीव ब्रह्म या परमसत्य के ही विभिन्न रूप हैं और चूँकि सभी में एक ही आत्मा विद्यमान है, इसलिए यह भेद करना कि यह ब्राह्मण है या 'यह पुलया है' निराधार है।

डी.सी.बी.पी.नायर द्वारा रचित 'श्रीनारायण गुरु : आध्यात्मिक क्रांति के अग्रदूत' शीर्षक ग्रंथ से उद्धृत पुस्तक का प्रकाशक है मान गंगा नई दिल्ली - 110 002

केरलज्योति

केरल हिंदी प्रचार सभा
की मुख पत्रिका
(केंद्रीय हिंदी निदेशालय की
वित्तीय सहायता से प्रकाशित)

अनुक्रमणिका

मुद्रणालय : केरल के पूर्व मुख्यमंत्री स्व.उम्मन चांडी

स्वातंत्र्योत्तर हिंदी महिला कहानीकार : एक अंतरंग पहचान

डॉ. राजेष कुमार.आर

सन उन्नीस सौ पचास के आसपास अनेक महिला लेखिकाओं ने कहानी सर्जना के क्षेत्र में अपने हस्ताक्षर छोडे। नई कहानिकारों ने हिन्दी कहानी साहित्य को नया मान प्रदान किया। स्वातंत्र्योत्तर हिन्दी साहित्य में महिला कहानी लेखन उत्तरोत्तर समृद्धि पा रहा था। तब तक भारतीय परिवेश में भरपूर परिवर्तन आया था। व्यक्तिवाद, अस्तित्ववाद, मार्क्सवाद , फ्रायडवाद और गांधीवाद का प्रचार हो रहा था। स्त्री शिक्षा उन्नति पा रही थी और भारतीय नारियों की जागरूकता बढ रही थी, उसकी प्रतिवाद क्षमता भी। अपनी कमजोरियों और दुर्बलताओं का पता नारियों को मिला, नारी शोषण की व्याप्ति का उसे अवबोध मिला। इस समय अनेक लेखिकाओं ने अपनी सृजनधर्मिता की शुरुआत की। इन्होंने मुख्य रूप से कहानी साहित्य को अपना सृजन केंद्र बना दिया। हिन्दी की लोकप्रिय कहानिकारों की सर्जना इस काल में हुई।मन्नु भंडारी , उषा प्रियंवदा, ममता कालिया, मृदुला गर्ग, चित्रा मुद्गल, मधु कांकरिया, क्षमा शर्मा, गीतांजली श्री, मनीषा कुलश्रेष्ठ, अल्पना मिश्र, नीलाक्षी सिंह, शर्मिला बोहरा, जालान आदि तत्कालीन समय के चर्चित लेखिकाएँ हैं।

समकालीन हिन्दी साहित्य जगत के मूर्धन्य कथाकार मन्नू भंडारी का हिन्दी साहित्य में शीर्ष स्थान है। स्वतंत्रता के बाद उभर आये मध्यवर्गीय जीवन का मन्नू भंडारी की कहानियों में जीवंत अंकन है। स्त्री पुरुष संबंधों के बदलते आयामों का उनकी कहानियों में भावप्रवण चित्रण है। मन्नु भंडारी ने बदलते जीवन संदर्भ को पैनी दृष्टि से आंका है और खुले दिमाग से नारी जीवन की असलियत को देखा परखा है और उन्हें बडी हार्दिकता एवं सादगी के साथ व्यक्त किया है। सजा, क्षय, तीसरा आदमी ,रेत की दीवार, संख्या के पार, यही सच है, एक बार और, त्रिशंकु, एक प्लेट सैलाब आदि आपकी चर्चित एवं लोकप्रिय कहानियाँ है। मन्नू भंडारी की ख्याति का मूलाधार कहानी है सजा। सजा कहानी में मध्यवित्त परिवारों की अन्तर्दशा का सूक्ष्म और मार्मिक चित्रण है। आर्थिक संकट के दौर में परिजनों के व्यवहार की सूक्ष्म पडताल इस कहानी का अभीष्ट है। मनोवैज्ञानिक सूझबूझ से भरी यह कहानी, आरोपी व्यक्ति के व्यवहार शिल्प, उसका अपने बच्चों से संबंध तथा उसके प्रति उसके सगे संबंधियों का अपनत्व तथा दुराव सब इस कहानी में स्थान बनाते हैं।

स्वातंत्र्योत्तर हिन्दी कहानी को श्रीवृद्धि में ममता कालिया का स्मरणीय योगदान है। नारी जीवन के विभिन्न आयामों की गति - विगतियाँ उनकी अनेक कहानियों में अभिव्यक्त हैं। आपकी कहानियों में यह बात विशेष रूप से उभरकर सामने आती है कि आज भी नारी यातना मुक्त नहीं है, आज भी वह पति द्वारा अपमानित है तथा उसके बेमेल स्वभाव और प्रकृति को झेलते हुए नारकीय जीवन व्यतीत करती है। नारी के उत्पीडन तक ममता कालिया की प्रतिभा सीमित नहीं, उन्होंने यह भी सिद्ध किया है कि नारी - मुक्ति के रास्ते में सबसे बडी बाधा नारी के अपने घरवाले ही उपस्थित करते हैं लेकिन इसका तात्पर्य यह नहीं है कि लेखिका केवल नारी विमर्श की लेखिका है। सामाजिक,आर्थिक , राजनैतिक एवं सांस्कृतिक विसंगतियों के अनेक चित्र भी आपकी कहानियों में यथेष्ट मिलते है।

ममता कालिया की बहुचर्चित कहानी है लडकियाँ। ममता कालिया की लड़कियाँ कहानी इस तथ्य को भरपूर जीवंतता से उजागर करती रचना है स्त्री स्वातंत्र्य के रास्ते में सबसे बडी बाधा स्वयं लडकियों का निजी घर है, जिसमें उन्हें भीरु और छुईमुई बने रहने के संस्कार दिये जाते हैं। कोई भी व्यक्ति बचपन से जैसे परिवेश और जैसी अवधारणा में पलता बढता है, उसका व्यक्तित्व उसी के अनुकूल आकार पाता है। प्रस्तुत कहानी में आशा और सुधा दो प्रगतिशील निर्मम तथा महत्वाकांक्षी व्यक्तित्व भरी लड़कियाँ

है, जो कालेज में पढ रही है। एक ओर इन लडकियों का अंतर्संसार है, जो बडा आकाश खोजता है, दूसरी ओर उनके परिवारों की संस्कारगत संकीर्णता है, जिसमें इनकी भी, पिता तथा भाई सब इनके लिए प्रतिबंध ही बनते है।

हिन्दी की सशक्त लेखिका क्षमा शर्मा की लेखनी कहानी के क्षेत्र में उत्तरोत्तर प्रतिष्ठा पानेवाली लेखनी है । क्षमा शर्मा की विविध मुखी कहानियाँ समसामयिक भारतीय जीवन के एक-एक परिच्छेद की कहानियाँ है। इक्कीसवीं सदी का लडका, एक अधूरी प्रेम कहानी, नेम प्लेट, वेलेंटाइन डे, रसोई घर, यही कहीं है स्वर्ग, करवे की लडकी, दादी माँ का बटुआ आदि क्षमा शर्मा की ख्याति प्राप्त कहानियाँ है। रोजमर्रा के जीवन को कहानी का कलेवर देने में क्षमा शर्मा सिद्धहस्त है। कस्बों, नगरों और महानगरों में रहनेवाले मध्यवर्ग की उलझनों, आकांक्षाओं और सपनों को उन्होंने निजी शैली में अभिव्यक्त किया, अपनी कहानियों के माध्यम से। 'इक्कीसवीं सदी का लडका' कहानी आज के समय में एक नयी पीढी की मानसिकता के उदय की तस्वीर पेश करती है। एक मध्य वित्त परिवार में जिसमें एक बच्चे के माता और पिता दोनों ही कामकाजी है, बच्चा किस तरह स्वतंत्र रूप से आत्मनिर्भर होता चलता है और उसका नजरिया कैसे धीरे - धीरे बदलता जाता है, यह कहानी उस विकास यात्रा का एक संवेदना पूर्ण लेखा जोखा है।

स्वातंत्र्योत्तर काल में महिला लेखक गण और गुण की दृष्टि से आगे बढे। कहानी साहित्य के विकास में लेखिकाओं की भूमिका निर्णायक रह गयी। लेखिकाओं की तूलिका से अस्तित्व और अस्मिता के लिए संघर्षरत नारियों के प्रतिरूप निकले। स्वातंत्र्योत्तर काल में नारी लेखन को मान्यता मिली, उनकी लोकप्रियता बढी, हिन्दी साहित्य से नारी लेखन को अलग करना अशक्य रह गया।

असिस्टेंट प्रोफसर, हिंदी विभाग
महात्मा गाँधी कालेज
तिरुवनंतपुरम

क्या मैं याद रखूँ?

सुजित.एस

इन सूरतों में क्या मैं याद रखूं?
पल-पल इन्हें बदलते ही देखा है।

कहा जाता है, रंगीन है ज़िन्दगी
सच्चाई यह है, हमने काला ही देखा है।

नफरत के मुखौटे, कभी गिरते ही नहीं,
अपनों को भी, इसे संभालते ही देखा है।
उन सूरतों में इंसानियत नहीं थी,
जिसे गली के कुत्ते में भी देखा है।

अपनों ने ही लूटा है, परायों में क्या दम ?
चीटियों को भी हमेशा, साथ चलते ही देखा है।
सुना था दोस्त हो तो, आईना नहीं चाहिए
पर काँच के टुकड़ों में ही, अपनों को देखा है।

छात्र
आचार्य प्रशिक्षण केंद्र
केरल हिंदी प्रचार सभा

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THE TRAUMA OF QUEER COMMUNITIES: A STUDY OF GEO-POLITICAL REALITY OF THE NORTH-EAST

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Abstract

The incredible heterogeneity of the Northeast is often ignored by the rest of the country while producing and reproducing preposterous stereotypes about the region. The 'mainland' fails to recognize the diversity within and among the peoples of the North-East which has invariably resulted in the formation of a periphery/mainstream binary, where the North-East forms merely the periphery of Indian culture. A major hindrance in the way of empowerment is the lack of mainstream representation. Mainstream media, through a tactful endorsement of hegemonic ideals, caters exclusively to a heteronormative and racially superior section of the society, thereby pushing the queer Northeastern individual further to the margins of culture. Discrimination and trauma that awaits an average Northeastern queer individual in the metropolitan cities of the country are discussed in this paper. Ethnic and social minorities are often overlooked in the framing of certain influential theories in Trauma studies like that of Cathy Carruth and Kirby Farrell. This study discusses the facets of trauma imposed on Northeastern queer communities through generations of systemic oppression. It is debatable whether Trauma of the Northeastern queer is one single shared experience or if it is an anthology of diverse, personalized traumas. North-East is one of the most heterogeneous regions of the country. Subsequently, the queer experience within the North-East is also not homogeneous. While some tribes and communities within the North-East still nurture vehement homophobia, others have become more tolerant and inclusive. The recent trend, however, is towards progress. Various support groups have taken birth to help encapsulate the internalized trauma of queer communities within the Geo-political reality of the North-East. An analysis of the gay liberation movements in the region is also attempted in the present study.

Keywords: North-East, Queer, Trauma, Mainstream Representation, Support Groups.

Introduction

In addition to systemic ostracism, the North-East of India has also endured variegated persecution including a dearth of mainstream representations. Indians from the Northeastern states of the country have been, since time immemorial, invisible and brutally banished to the margins of culture- their voices fettered and their silences celebrated. Negative and offensive stereotypes about the North Eastern population have given birth to a periphery/ mainstream binary, which is not only preposterous but misleading as well. It robs the people of their very history and even dignity. An average Northeastern individual living in mainland India is a victim of much more than racial othering and cultural subordination. Their body is exploited and excessively sexualised. The unsolicited tag of exoticism and intense eroticism is a perennial curse on the Northeastern body. Even harsher is the plight of queer people hailing from the same geopolitical space.

A hetero normative society has already assumed the position of the mainstream and has exiled the queer to its periphery. Like the North-East of India, the queer communities of the country are also victimized and are exposed to vicious prejudice. This paper discusses how the homosexual and transgender communities from the Northeastern states are doubly

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