CRITERION 3

SSR CYCLE IV

RESEARCH, INNOVATIONS AND EXTENSION

3.3. Research Publication and Awards

3.3.2.1: Total number of books and chapters in edited volumes/books published and papers in national/ international conference proceedings year wise during last five years

To whomsoever it may concern

I hereby declare that the following details and documents are true to the best of my knowledge. They have been checked and verified.

3.3.2. Number of books, chapters and papers in conference proceedings

S. No	Academic Year	No. of Books	No. of Chapters	No. of Conference Proceedings	Total
1	2022-2023	23	25	43	91
2	2021-2022	09	16	19	44
3	2020-2021	14	10	25	49
4	2019-2020	16	15	29	60
5	2018-2019	02	06	06	14

(Dr. K. SUBBULAKSHMI)
Principal i/c
Principal
A.P.C. Mahalaxmi College for Women
Thoothukudi

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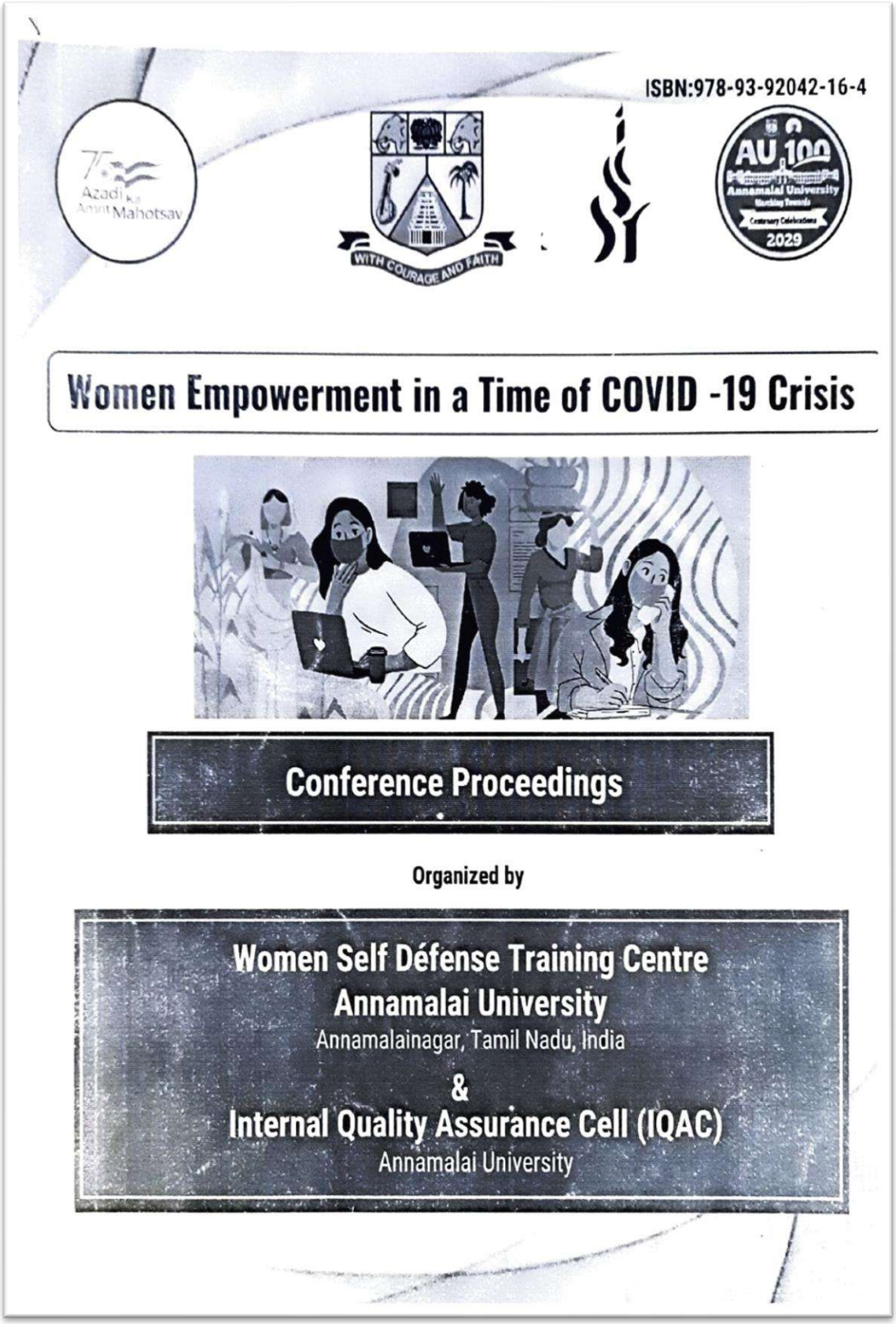
2022-2023

Proceedings

Contents

1. Dr.J.Vasantha Sena - Postcolonial Feminism: A Study of Alexis Wright's The Swan Book



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Content

Women Empowerment in a Time of COVID -19 Crisis *ISBN:978-93-92042-16-4*

POSTCOLONIAL FEMINISM: A STUDY OF ALEXIS WRIGHT'S *THE SWAN BOOK*

R. Priyadarshini, *Ph.D. Research Scholar, PG & Research Department of English, A.P.C. Mahalaxmi College for Women, Thoothukudi. Manonmaniam Sundaranar University,*

&

Dr. J. Vasantha Sena, *Research Supervisor & Assistant Professor, PG & Research Department of English, A.P.C. Mahalaxmi College for Women, Thoothukudi. Manonmaniam Sundaranar University.*

Abstract

The present research article aims to analyse Alexis Wright's novel The Swan Book in the cannons of Postcolonial Feminism. The study elucidates the oppression inflicted upon women in the patriarchal colonial structure. The Swan Book portraits the dystopian futuristic Australia after about one hundred years from the present, only to have been damaged by the inescapable climate conditions after the Anthropocene attitude of the humankind. As an indigenous work the novel presents the sufferings of the indigenous women in the hands of both the colonisers and their very own. The indigenous culture which has borne the brunt of forced colonial infliction, is struggling to hold onto it's roots and longing to retain its grounding with no luck. The present research study utilises the literary concept. double colonisation to inculcate the understanding of how women are oppressed and treated as the other in the patriarchal structure.

Keywords: The Swan Book, Postcolonial feminism, double colonisation, indigenous people and patriarchal society.

Introduction

Feminism is not a new concept for it has around for a long time since before the early 1970s. The unequal and oppressing treatment of women by men has garnered enough and fair reaction from the female gender to raise voice against the gender discrimination. The literary concept has gone through many phases depending on the intensity of attention and changes it warranted in various cultures from all over the world. The female gender has had to face the suppression twice what with their status being a colonised female. Thus the emergence of double colonisation has led to a better understanding of Postcolonial feminism.

Postcolonial feminism is described in the words of Robert J. C. Young as follows:

Postcolonial feminism has never operated as a separate entity from postcolonialism; rather it has directly inspired the forms and the force of postcolonial politics. Where its feminist focus is foregrounded, it comprises non-western feminisms which negotiate the political demands of nationalism, socialist feminism, liberalism, and eco-feminism, alongside the social challenge of everyday patriarchy, typically supported by its institutional and legal discrimination: of domestic violence, sexual abuse, rape, honour killings, dowry deaths, female feticide, child abuse.

Australia has been exploited by the western colonisers for its resources and the indigenous people naturally bore the brunt of its destructive aftermaths. The indigenous people are all run out of their homes after the ravaging climatic conditions their traditional land has gone under. Their land has been exploited by the European settlers for material resources during colonisation. As a result they are left stranded in a detention camp away from their home having lost their country to the ravage of the climate change. The indigenous people are enforced to settle in the detention camp in a swamp like place called Swan Lake. The indigenous people also had to lose their intimations with their culture as well as their sacred land.

The violence against women presented in *The Swan Book* clearly indicates the novel

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2. Dr. J. Vasantha Sena – Adventure of Modern Teaching Strategies

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Adventure of Modern Teaching Strategies

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ABSTRACT

The paper deals with the modern teaching strategies such as ICT tools which become familiarized because of the pandemic situation. It also speaks about the practical difficulties as well as some of the initiatives that can be taken to overcome the above said difficulties. The modern teaching strategies helped a lot in connecting the students during the pandemic situation. Even though handling online classes was a tough job, with the cooperation of each and every student as well as the faculty members it became a successful process. Various ICT tools as well as the discussion on online assessments were also discussed briefly.

Keywords: Online, ICT tools, Modern teaching strategies, Assessments, Pandemic

The COVID – 19 pandemic period has changed everything completely. The belief on the traditional classroom couldn't allow the people to think out of the box. Most of the teachers had a big issue on contacting the students during this lockdown. As the days passed by, the severeness of the COVID 19 and the restrictions on the social distancing went peak. So there came a necessity of some modern teaching strategies to meet up the prevailing situation. After facing a lot of difficulties there came into existence of modern teaching strategies as well as teaching aids. Even though there was some initial difficulties in connecting the students through these modern tools, teachers as well as students got adapted to these tools.

Anthropological Research: A Multi-dimensional Approach

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Editor : Dr.T.Lilly Golda

Associate Editors : Dr.V.R.Pavithra, Dr.V.Shyamala Susan, Dr.R.Samundeswari

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3. Dr. T. Lily Golda - The Implications of War in Easterinekire's Sky is my Father: A Naga Village Remembered

Proceedings of the Two Day National Seminar on Anthropological Research:
A Multidimensional Approach

THE IMPLICATIONS OF WAR IN EASTERINEKIRE'S SKY IS MY FATHER: A NAGA VILLAGE REMEMBERED

S. ABIRAMI
Ph.D. Scholar, PG & Research Department of English,
A.P.C. Mahalaxmi College for Women, Thoothukudi,
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Abishekapatti, Tirunelveli.

Abstract

Easterine Kire's Sky is my Father: A Naga Village Remembered revolves around a family which involves the traditions and culture of Khonoma village, and the natives' love for their land. It is mainly about the lives of the people in Khonoma village during the war and their continuous efforts to protect their land from the Englishmen who plan constantly to make them surrender. The story depicts the endeavour of Levi, a warriorwho lost his grand fatheras well as father in the battle; but he was inspired by the valour of his community and followed their foot steps; But his sons took different paths in their life since they were influenced by the consequences of war. Christianity has made tremendous changes in the life of Khonoma villagers after the war. So, this paper highlights the life, culture and religious practice of Khonoma natives which they had before the war and the endeavours that they encountered after the war.

Keywords: Anthropology, Culture, Influence, Change, Religion.

Anthropology is the study of humanity. The term Anthropology is a combination of the two Greek words 'anthropos,' meaning 'human,' and 'logy,' referring to 'the study of.' It identifies the aspects of being human as its focus. It determines all the aspects of humanity from cultures, to languages, to material remains and human evolution.

It comprises four subfields including cultural anthropology, archaeology, biological or physical anthropology, and linguistic anthropology. The subfield of cultural anthropology studies the similarities and differences among living societies and cultural groups. Cultural anthropologists often study the social groups that differ from their own. Instead, they seek to understand the beliefs within the system of people In the work The Construct Validity of Cultures: Cultural Diversity, Culture Theory, and a Method for Ethnography, P.WennHand

4. P. SanthanamariAlissurya – vitexnegundo mediated green synthesis and characterization of ironoxide nanoparticle

Proceedings of the Two Day National Seminar on Anthropological Research: A Multidimensional Approach

VITEX NEGUNDO MEDIATESD. R. SYNTHESIS AND CHARACTERIZATION OF IRON OXIDE NANOPARTICLE

P. SANTHANAMARI @ SURYA
Assistant professor, PG & Research Department of Chemistry, A.P.C. Mahalaxmi College for Women, Thoothukudi.

P. GURULAKSHMI
Assistant professor, PG & Research Department of Chemistry, A.P.C. Mahalaxmi College for Women, Thoothukudi.

Abstract:

Recently Iron Oxide Nano particles have attracted much consideration due to their unique properties such superparamagnetism. Surface to volume ratio, greater surface area and easy separation methodology. The use of plant extract is found to be a fascinating approach for non-toxic and efficient synthesis of iron nanoparticles. The work was conducted with the green synthesis of iron oxide nanoparticles using FeSO4 solution with aqueous extract of Vitex Negundo under atmospheric condition. Iron Oxide nanoparticles is characterized by UV-Visible and XRD spectroscopy. The formation of iron oxide nanoparticles is determined by the color change. Iron Oxide Nanoparticles can be a good source for alternative therapy for human diseases.

Keywords: Iron Oxide Nanoparticles, GreenSynthesis,Vitex Negundo.

INTRODUCTION

Metallic nanoparticles have different physical and chemical properties from bulk metals (e.g., lower melting points, higher specific surface areas, specific optical properties, mechanical strengths, and specific magnetizations), properties that might prove attractive in various industrial applications [1]. Nanotechnology and Nanoscience studies have emerged rapidly during the past years in a broad range of product domains.. Nano technology represents the design, production and application of materials at atomic, molecular and macromolecular scales, in order to produce new nanosized materials. The term nanoparticle is a combined name for both nanospheres and nanocapsules[2].Magnetic NPs are of great curiosity for investigators from an eclectic range of disciplines, which include heterogenous and homogenous catalysis, biomedicine, magnetic fluids, data storage Magnetic Resonance Imaging (MRI), and environmental remediation such as water decontamination. Theliterature revealed that NPs

5. D. ShanmugaPriya – Adsorption Studies of Chromium Ions using a Simple Asidian, PhallusiaNigra

Proceedings of the Two Day National Seminar on Anthropological Research: A Multidimensional Approach

ADSORPTION STUDIES OF CHROMIUM IONS USING A SIMPLE ASCIDIAN, PHALLUSIA NIGRA

D. SHANMUGA PRIYA, S.SANKARAVADIVU, H. KOHILA SUBATHRA CHRISTY
Assistant Professor, Department of Chemistry,
A.P.C Mahalaxmi College for Women, Thoothukudi

S.SUDHA
Assistant Professor, Department of Physics,
A.P.C Mahalaxmi College for Women, Thoothukudi

ıbstract

Heavy metals are known for their persistent biodegradation and accumulation in living organisms causing serious health problems. Surge for replacement of activated charcoal with plant based biomass is the main ai. Adsorption of heavy metals is an important problem in the advanced time. *Phallusia nigra* is reported to possess anti-inflammatory, anticancer, aphrodisiac and hepatoprotective activities. Activated carbon prepared from Phallusia nigra extract, was used to adsorb Chromium (VI) from waste water by adsorption process in batch studies. Dosage of adsorbent, pH, contact time like various parameters were studied in this paperThe maximum adsorption capacity (Qm) in the optimum pH of 2.0, with the adsorbent dosage of 100 mg was found to be 0.598, 0.131 and 1.366, 1.030 (mg/g) for the biosorbents on Chromium (VI) respectively. FTIR spectral studies and SEM surface morphology of the carbon were performed by before and after the adsorption of Chromium (VI) to analyze the binding nature of the adsorbent. The results revealed that the removal of Chromium (VI) were within the range of 89.6%, for *Phallusia nigra*. Based on this study, the activated carbon prepared from the ascidian *Phallusia nigra* holds a excellent behavior in the removal of heavy metals from industrial effluents.

INTRODUCTION

Water is an elixir of life, abundantly available in nature. It is also an essential ingredient of animal and plant life. In human body, water acts as a solvent for the secretory, excretory products and as a carrier of nutritive elements to tissues [1]. But today most of the countries are facing availability of potable water. In India, drinking water is contaminated by various pollutants [2]. The presence of heavy metals in the environment is one of the major concerns because of their toxicity and threat to human life. They accumulate in living tissues through the food chain which has humans at its top. These toxic metals, cause poisoning, cancer and brain damage which cross the exceed level [3].

Most important one of the heavy metals and environmental pollutants is chromium. It is present in aqueous solution mainly in Chromium (III) and Chromium (VI) oxidation states. The hazardous effects of Chromium (VI) are different that of Chromium (III) [4]. Chromium (VI) which is highly toxic has greater aqueous solubility and it is absorbed more readily from the lungs than Chromium (III) which is more stable and less toxic [5]. Effluents of electroplating, paint, dyeing, pigment, mining, fertilizer and photography industries [6] which was chromium,

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6. Dr. T. Lily Golda - Music and Mind: Exploring Captivity Soundscape in Ann Patchett'sBel Canto

Proceedings of the Two Day National Seminar on Anthropological Research: A Multidimensional Approach

MUSIC AND MIND: EXPLORING CAPTIVITY SOUNDSCAPE IN ANN PATCHETT'SBEL CANTO

R. JEFFRIN PRINCY
Research Scholar,
P.G. & Research Department of English,
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Dr. T. LILLY GOLDA
Assistant Professor,
P.G. & Research Department of English,
A. P. C. Mahalaxmi College for Women, Thoothukudi.

Abstract

Music refreshes the soul and keeps the mind alive. It connects different cultures together and radiates positive energy. It opens the door of different worlds and residing in them is a great escape from reality. The soothing quality of music helps to put aside melancholy and invest in mental rehabilitation. Music in the literary landscape is evident in the works of early writers who passed down the tradition to the contemporary world of literature. The inclusion of music promotes the aesthetic quality of language and literature. The universal nature of music unites people with different cultural backgrounds who have a similar taste in music. The neologism, Soundscape, was originally coined by Michael South worth in his research paper entitled " The Sonic Environment of Cities", and popularized by Raymond Murray Schafer, a Canadian composer and educator. The term Sound scape derived from Landscape denotes a musical environment created by natural and artificial sounds. The term also denotes the interpretation of sounds by those who listen to it. In Ann Patchett'sBel Canto, the captives with different cultural backgrounds join together to hear the voice of a reputed singer at the event of a birthday party but unfortunate l yend up in a tragic situation. This research work indulges in exploring the acoustic environment of the captivated people, the victims of an unexpected terrorist attack and their reception to it.

Keywords: Sound Scape, Captivity, Acoustic Environment

Music is a powerful commodity that connects people of different races, cultural backgrounds and ethnicity and makes them fall under the same category as the aesthetic lovers of music. When language becomes a cultural barrier to express one's thoughts, music comes for the rescue. Ann Patchett's Bel Canto validates the power of music in bringing people together. The events of the novel take place somewhere in South America, at the home of the country's president. As the novel progresses, we come to know how a lavish birthday party held in honor

ABOUT THE COLLEGE

A.P.C Mahalaxmi College for Women, Thoothukudi, established in 1973 is the brain child of eminent scholar and philanthropist Kulapathi A.P.C. Veerabahu, the founder president. Since its inception it has scaled great heights in imparting quality education and has made it affordable to the economically and socially backward women of the vicinity.

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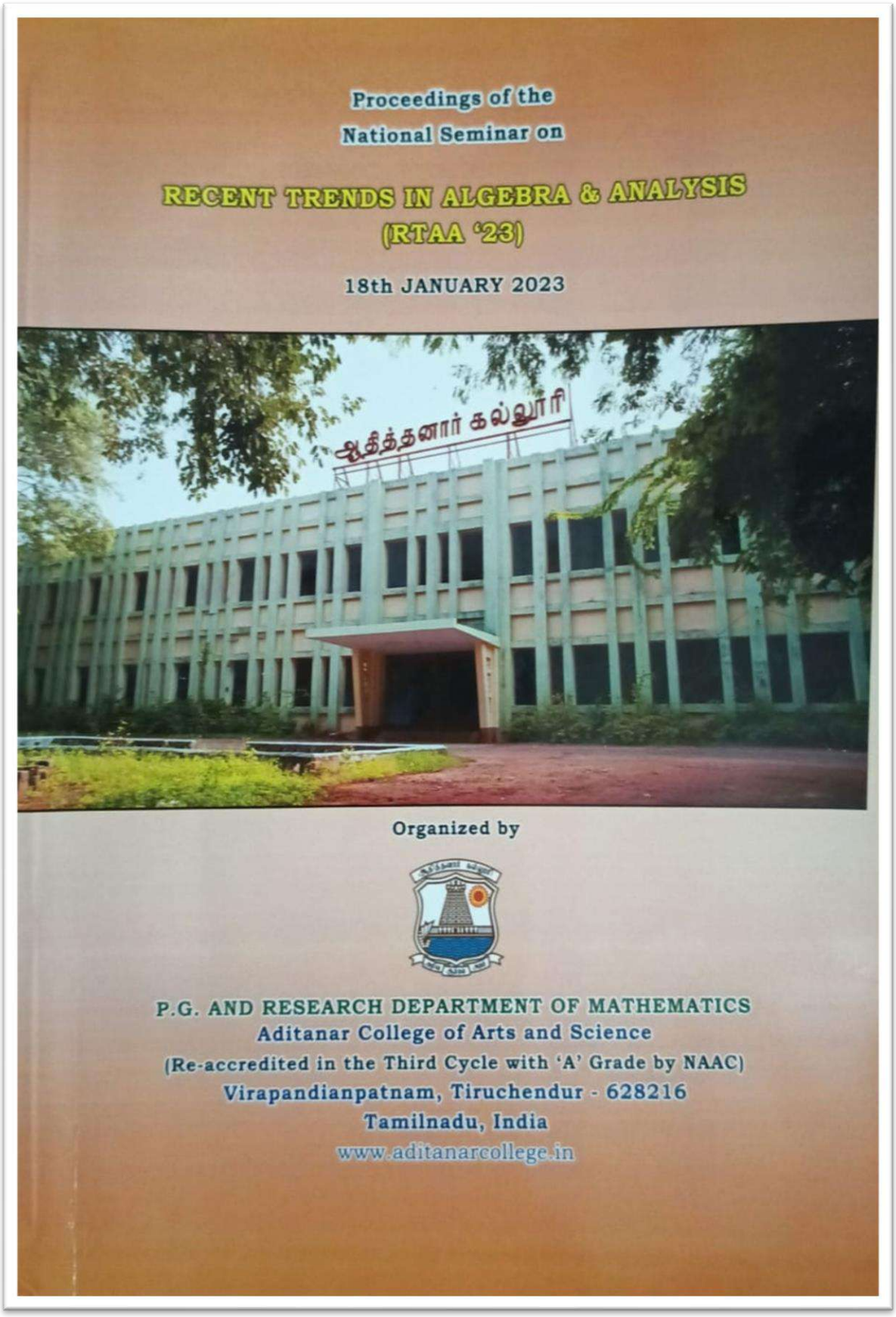

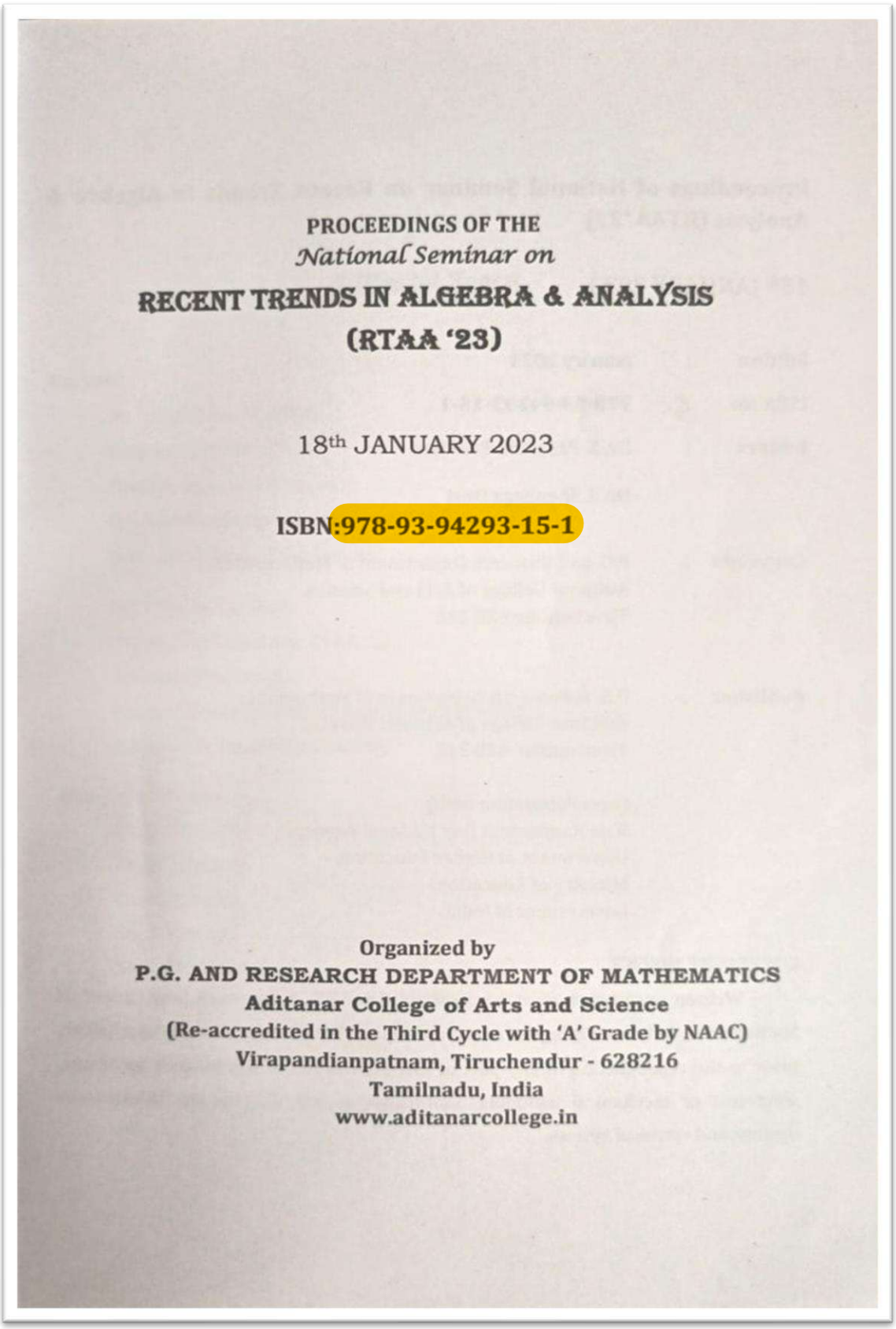

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7. Dr.V.Maheswari - Ascending Bi-Pendant Domination Decomposition Polynomial of Tensor Product of Some Graphs

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Ascending Bi-Pendant Domination Decomposition Polynomial of Tensor Product of Some Graphs

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Abstract

Let $G = (V, E)$ be afinite undirected simple graph.We introduced Ascending Bi-Pendant Domination Decomposition Polynomial of Path and Cycle in [7] and is defined as follows: Let G be a graph which admits ABPDD into $n-$ parts. For each $i = 1,2,\dots,n$, let $\mathcal{M}\left(G, \gamma_{bpe}(G_i)\right)$ be the family of connected subgraphs with $\gamma_{bpe}(G_i)$ and $m\left(G, \gamma b_{pe}(G_i)\right) = \left|\mathcal{M}\left(G, \gamma_{bpe}(G_i)\right)\right|$. Then *ABPDD* polynomial of a graph G is defined as $M(G,x) = \sum_{i=1}^{n} m\left(G, \gamma_{bpe}(G_i)\right) x^{\gamma_{bpe}(G_i)}$. In this paper, we have found that Ascending Bi-Pendant Domination Decomposition Polynomialfor Tensor Product of Some Graphs.

Keywords: Dominating Set, Pendant Dominating Set, Bi-Pendant Dominating Set, Pendant Domination Decomposition and Bi-Pendant Domination Decomposition.

AMS Subject Classification: 05C69and 05C70.

1.Introduction

Let $G = (V, E)$be a finite undirected simple graph. A vertex of degree zero is called an isolated vertex and a vertex of degree one is called a pendant vertex. An edge incident with a pendant vertex is called a pendant edge. The concept of Bi-Pendant Domination in Graphs [11] was introduced by NayakaAbhi, S.R PuttaswamyRangaiah and S.Purushothama.We introduced the concept of Ascending Pendant Domination Decomposition Polynomial of Graphs in [5].We introduced the concept of Ascending Bi-Pendant Domination Decomposition Polynomial of Path and Cycle in [7] and here extend this concept for tensor product of graphs.In this paper, we obtained Ascending Bi-Pendant Domination Decomposition Polynomial for $P_p \wedge K_2$and $C_p \wedge K_2$.

Definition 1.1. If $G_1, G_2, G_3, \dots, G_n$ are connected edge disjoint subgraphs of $G$with $E(G) = E(G_1) \cup E(G_2) \cup E(G_3) \dots \cup E(G_n)$, then $(G_1, G_2, G_3, \dots, G_n)$is said to be decomposition of G.

Definition 1.2. A subset S of vertices in a graph G is called a dominating set if every vertex $v \in V$ is either in S or adjacent to some vertex in S. The least cardinality of a dominating set in $G$is called the domination number of G and is usually denoted by $\gamma(G)$.

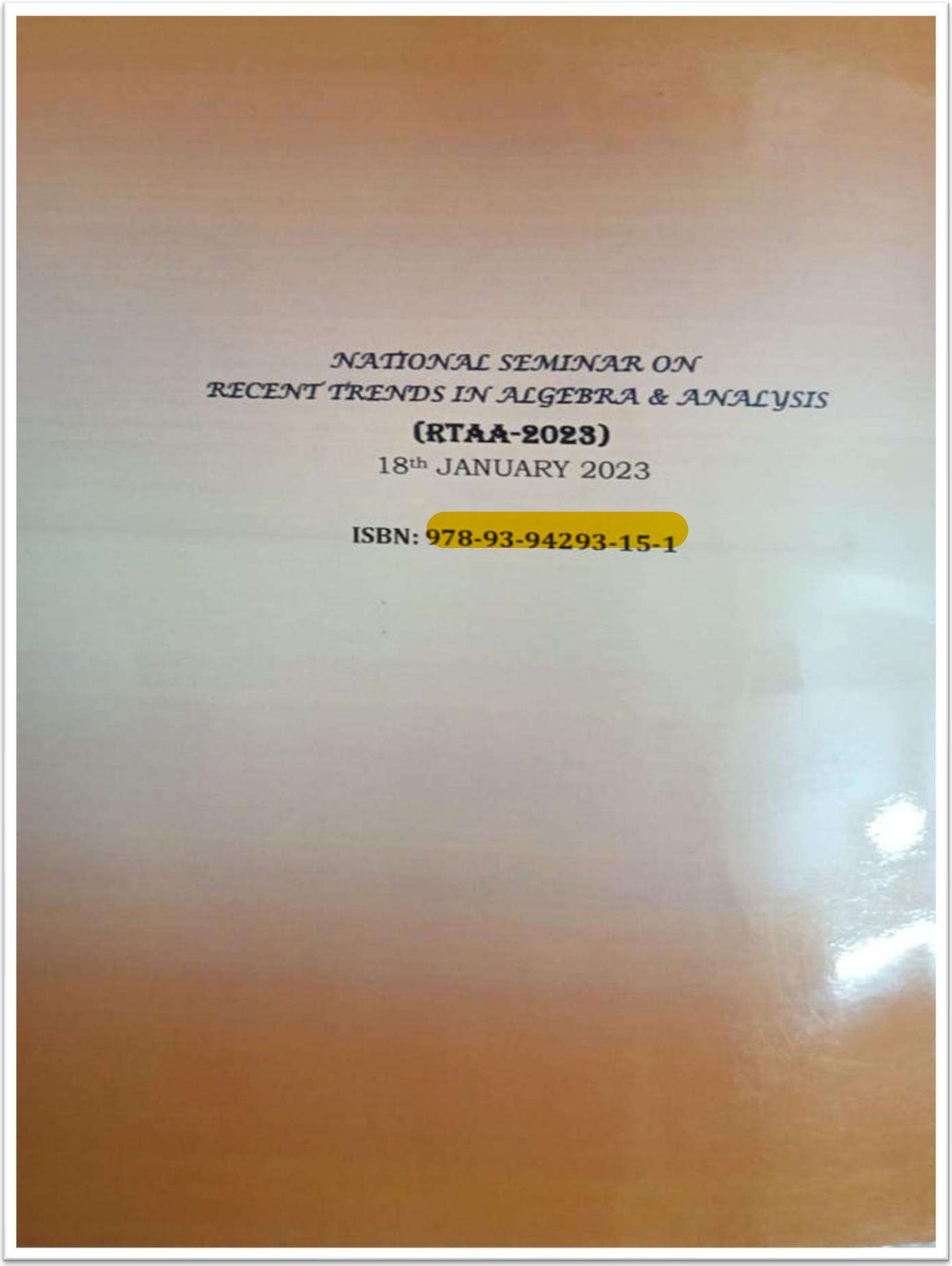
Definition 1.3.[10] A Dominating set S in $G$is called a Pendant Dominating Set if $< S >$ contains atleast one pendant vertex. The minimum cardinality of a Pendant Dominating Set is called the pendant domination number denoted by$\gamma_{pe}(G)$.

Definition 1.4.[11] A Pendant Dominating set S in G is called a Bi-Pendant Dominating Set if $< V \setminus S >$ also contains pendant vertex. The minimum cardinality of a Bi-Pendant Dominating Set is called the bi-pendant domination number denoted by $\gamma_{bpe}(G)$.

Definition 1.5. Let$G_1 = (V_1, E_1)$ and $G_2 = (V_2, E_2)$ be two graphs. The tensor product $G = G_1 \wedge G_2$ is defined as a graph with vertex set $V_1 \times V_2$. Edge set is defined as follows: If $w_1 = (u_1, v_1)$ and $w_2 = (u_2, v_2)$ are two vertices of G with $u_i \in V_1$and $v_i \in V_2, (i = 1,2)$ then $w_1 w_2 \in E(G)$ if and only if $u_1 u_2 \in E_1$ and $v_1 v_2 \in E_2$.

Definition 1.6.[3]A Decomposition $(G_1, G_2, \dots, G_n)$ of G is said to be Ascending Pendant Domination Decomposition (APDD) if (i) Each G_i is connected $(ii)\gamma_{pe}(G_i) = i + 1, 1 \le i \le n$.

Definition 1.7. [6]A Decomposition $(G_1, G_2, \dots, G_n)$ of G is said to be Ascending Bi-Pendant Domination Decomposition (ABPDD) if (i) Each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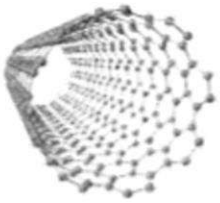

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POSTER PRESENTATION (PP)

ISBN: 978-93-5701-686-5 PG AND RESEARCH DEPARTMENT OF CHEMISTRY

8. Dr. N. Rathna - Studies on Optical properties of GlycineAmmonium Sulphate crystals

INTERNATIONAL CONFERENCE ON ADVANCED MATERIALS AND THEIR APPLICATIONS (ICAMA -2022)

PP - 01

Studies on optical properties of glycineammonium sulphate crystals

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Assistant Professor, Department of Physics, A.P.C. Mahalaxmi College for Women,Thoothukudi, TamilNadu, India.

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Abstract:

NLO materials play an important role in the domain of optoelectronics and photonics.The nonlinear optical (NLO) properties of large organic molecules and polymers have been the subject of extensive theoretical and experimental investigations during the past two decades. Among the organic crystals for NLO applications, amino acids display special features of interest such as molecular chirality which secures acentric crystallographic structure.It is known that inorganic and semi organic NLO crystals comparatively have good optical and electrical properties.An amino acid complex namely Glycine Ammonium Sulphate was synthesized by dissolving glycine and ammonium sulphate in 1:1.5 molar ratio at room temperature by slow evaporation technique. The optical studies such as optical transmittance, absorbance, band gap, linear absorption coefficient and extinction coefficient are performedfor the grown GAS crystal and discussed in this paper.

Key Words:

NLO Crystal, Optical Band gap Energy, Extinction Coefficient, XRD.

1. Introduction:

Nonlinear optical crystals cover a wide range of nonlinear optical applications and they are used for higher harmonic generation, including frequency doubling (SHG) and tripling (THG), frequency mixing and in devices including Optical Parametric Oscillators (OPO) and Optical Parametric Amplifiers (OPA)[1-3]. Glycine molecule can exist in zwitterion form and hence it is capable of forming compounds with anionic, cationic and neutral chemical compounds and a large variety of glycine coordinated compounds can be formed. In the present study, an attempt has been made to combine glycine with ammonium sulphate to form Glycine Ammonium Sulphate (GAS) single crystal and the grown crystals have been characterized under optical studies.

2.Crystal Growth:

An aqueous solution was prepared by dissolving analytical grade chemicals of glycine and ammonium sulphate in 1:1.5 molar ratio with continuous stirring using a magnetic stirrer for five hours at room temperature. The prepared solution was filtered and kept undisturbed in a constant temperature bath maintained at a temperature of 30°C. When evaporation takes place slowly, supersaturation is activated. As a result, transparent and colourless single

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9. Dr. S. Sankaravadivu – Biosynthesis of Magnesium Oxide Nanoparticles by Coleus amboinicus in Thoothukudi District

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PP - 14

Biosynthesis of Magnesium oxide nanoparticles by *Coleus amboinicus* in Thoothukudi District

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Abstract

Our research focused on the production, characterization and application of magnesium oxide nanoparticles (NPs), which can be utilized in biomedical research and environmental cleaning applications. We used an environmentally friendly extracellular biosynthetic technique for the production of the MgONPs. The reducing agents used to produce the nanoparticles were from the ethanolic extracts made from Coleus amboinicus. Synthesis of colloidal MgONPs was monitored by UV-Visible and IR spectroscopy. The UV-Visible spectrum showed a peak between 200 and 300 nm corresponding to the Plasmon absorbance of the NPs. The different types of antioxidants presented in this species reduce the Mg metal ions, as each antioxidant is unique in terms of its structure and antioxidant function. The re- action process was simple for formation of magnesium oxide nanoparticles and NPs presented in the ethanolic medium were quite stable, even up to 4 months of incubation. This work proved the capability of using biomaterial towards the synthesis of MgO nanoparticle, by adopting the principles of green chemistry.

Keywords: MgONPs; UV, IR

Introduction

Coleus amboinicus Lour. Spreng or Plectranthus amboinicus Lour, is commonly known as Indian/ country borage and 'Pathorchur' in Hindi and Bengali. It is recorded in the Indian system of medicine as one of the sources of Pashanabheda. It is used to treat conditions such as indigestion, diarrhea, nervous tension, insect bites, toothache, earache, rheumatism, whooping cough, and bronchitis. Nanoscience is a new interdisciplinary subject that depends on the fundamental properties of nanosize objects. Nowadays, researchers have developed exciting new materials in nanosize to progress the unique and tunable properties of the applied materials. An important aspect of nanoscience is related to the design of experimental methods for the synthesis of nanoparticles (NPs) of different chemical composition, size, shape and properties. Recently, researchers have tried to find biological methods for the synthesis of nanoparticles that will be the alternative to chemical or physical methods. They are cost effective and ensure the complete elimination of toxic chemicals. In addition, the synthesis of NPs using biological means, especially plants, is biocompatible, as

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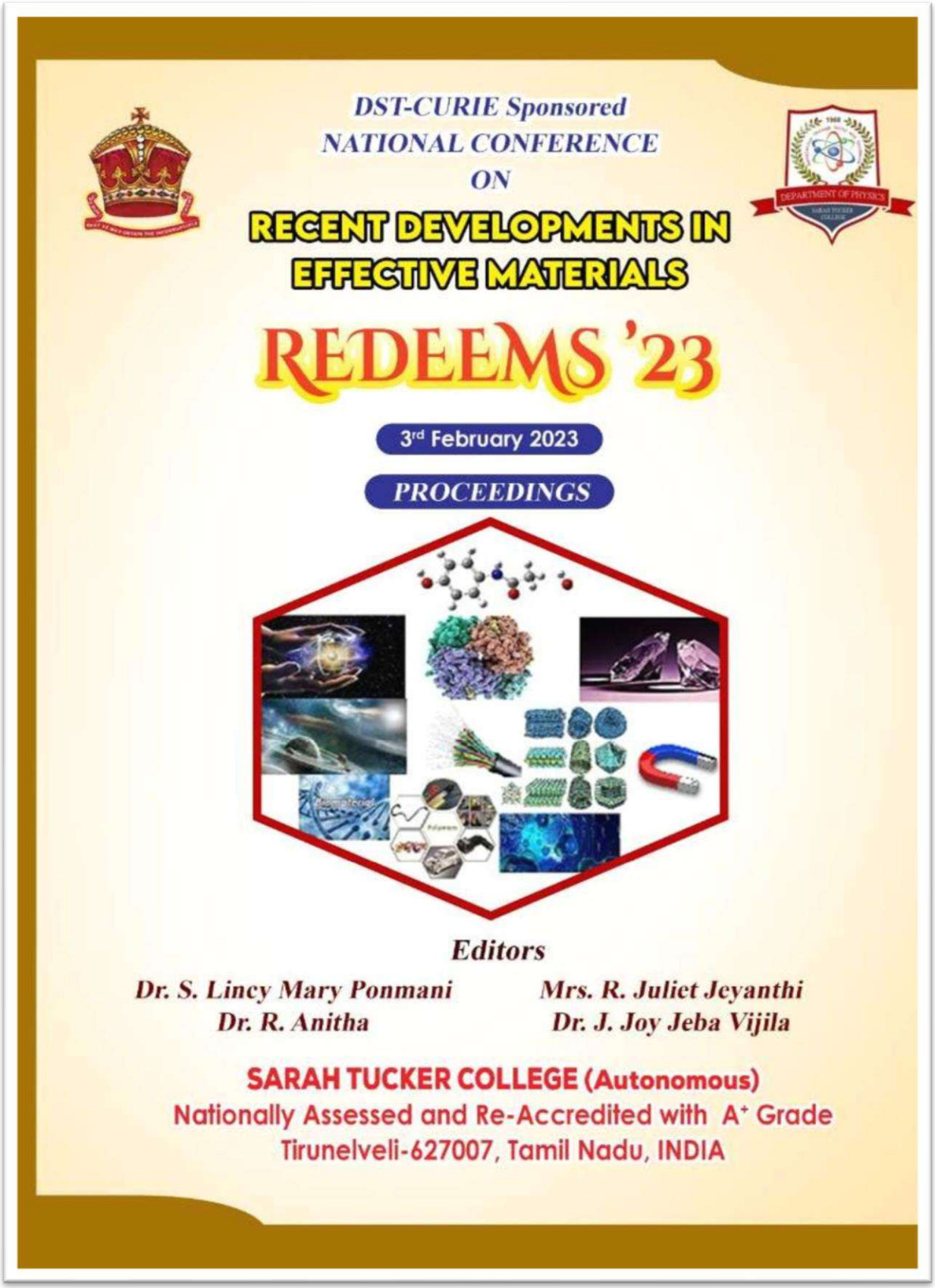

10. Mrs.R.SuyaPadhraHaridha- Spectral Analysis of Organically Ammended Soil

Spectral Analysis of Organically Amended Soil

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Abstract

This paper emphasis on amending the soil with organic manures like vermicompost and goat manure with differen concentrations of 8, 12.5 and 17 t ha^{-1}. The experiment was arranged in a Randomized Block Design (RBD) with thre different replications. A field study has been carried out for 3 months in servaikaranmadam of Thoothukudi district in 2018-2019 by growing Black Gram (*Vigna Mungo.L.*).For spectral studies soil samples were collected at a depth of 0-15 cm. The yield was highest for vermicompost along with goat manure at rate of 17 t ha^{-1} compared to other treatments. X-ray diffraction (XRD) has been a popular technique for investigating the major soil forming compounds. It is also vital for the soil-plant interaction purpose. To find more information about elemental composition of minerals, EDAX studies has beer done.

Keywords: Soil Minerals, X-Ray Diffraction (XRD), Randomized Block Design

1. Introduction

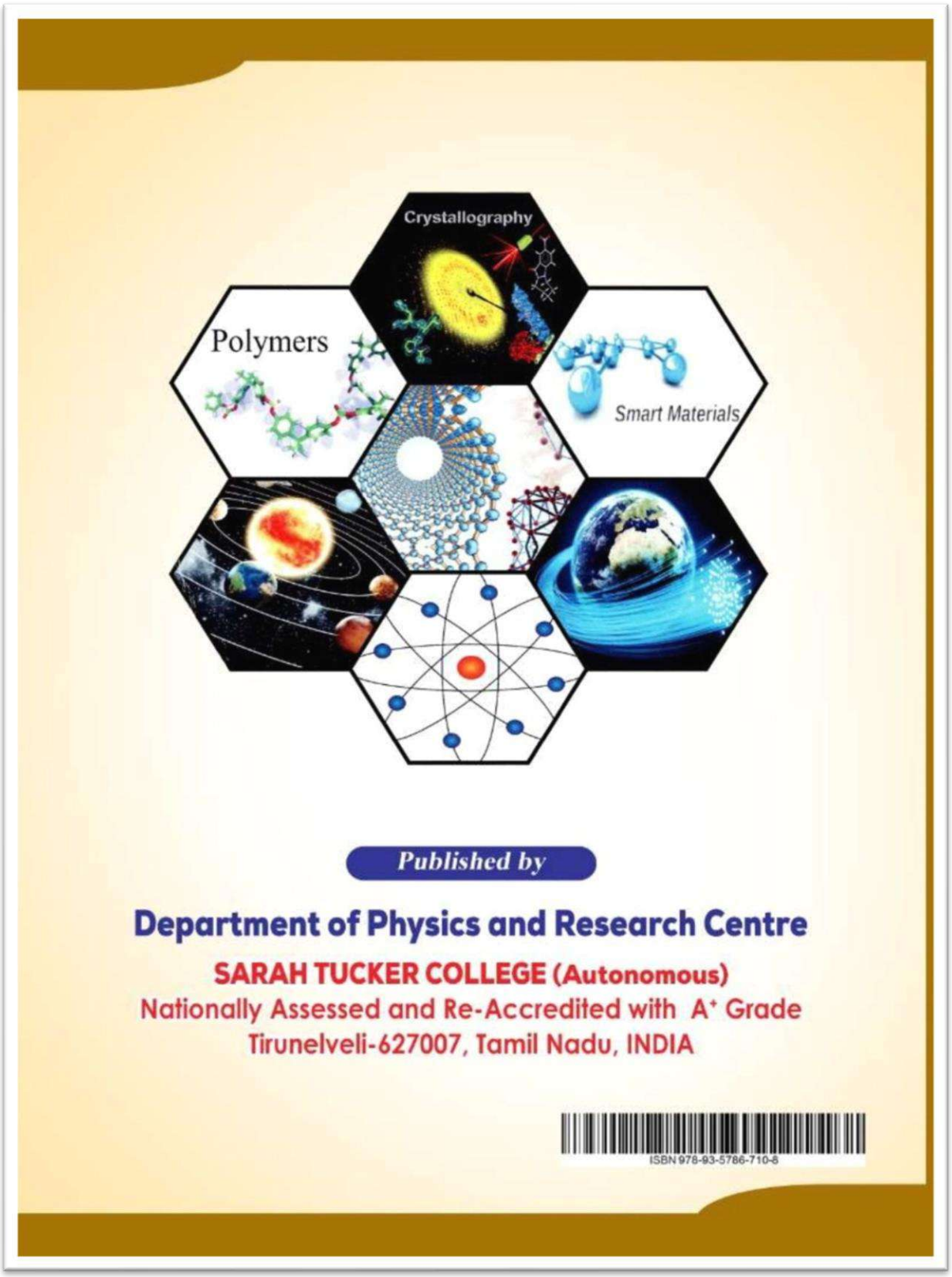
Like a human finger print, the diffraction pattern of each mineral has a specific X-ray reflection path [1]. XRD is the best technique for identifying the inorganic materials by quantitatively analysing the minerals in soil and sediment [2]. Presently, XRD has been used in qualitative analysis more than in the quantitative analysis. For qualitative analysis crystalline phases with 25,000 organic components and 50,000 inorganic components have been measured as standards [3][4]. Goat manure possess more nutrients compared to farm yard manure. It contains 3% of Nitrogen (N), 1% of Phosphorus (P), 2% of Potassium (K). Vermicompost is a stabilized organic material which are produced by earthworms and microorganisms. Vermicompost have been used to improve plant germination [5].

2. Experimental method

A field experiment was conducted in Kharif season 2018 at Servaikaranmadam of Thoothukudi district. Experiment was laid out in RBD with three replications. Black Gram (*Vigna Mungo.L.*) of variety Vamban BG (4)) was grown as test crop. Treatment consisted of T1-Control (Without application of organic manures); T2, T3, T4 – Vermicompost at 8, 12.5, and 17 t ha^{-1}; T5, T6, T7 – Vermicompost and Goat manure at 8, 12.5, and 17 t ha^{-1}. Altogether there were seven plots. Soil samples were collected randomly from each plot at a depth of 0-30 cm, after 30 days of manure application but prior to seeds sowing.The estimation of mineralogical composition present in the soil was determined using PXRDmethod. On the other hand, soil elemental analysis has been done using EDAX techniques.

3. Results and Discussion

The observed PXRD patterns of untreated soil represents the presence of silicate minerals like quartz, clay minerals such as montmorillonite, Illite, Hematite and Aragonite. The presence of these minerals' accounts for the low activity clay and nutrient depletion. **Figure 1** and **Figure 2** represents the PXRD pattern of untreated soil (T1) and organic amended soil (T7).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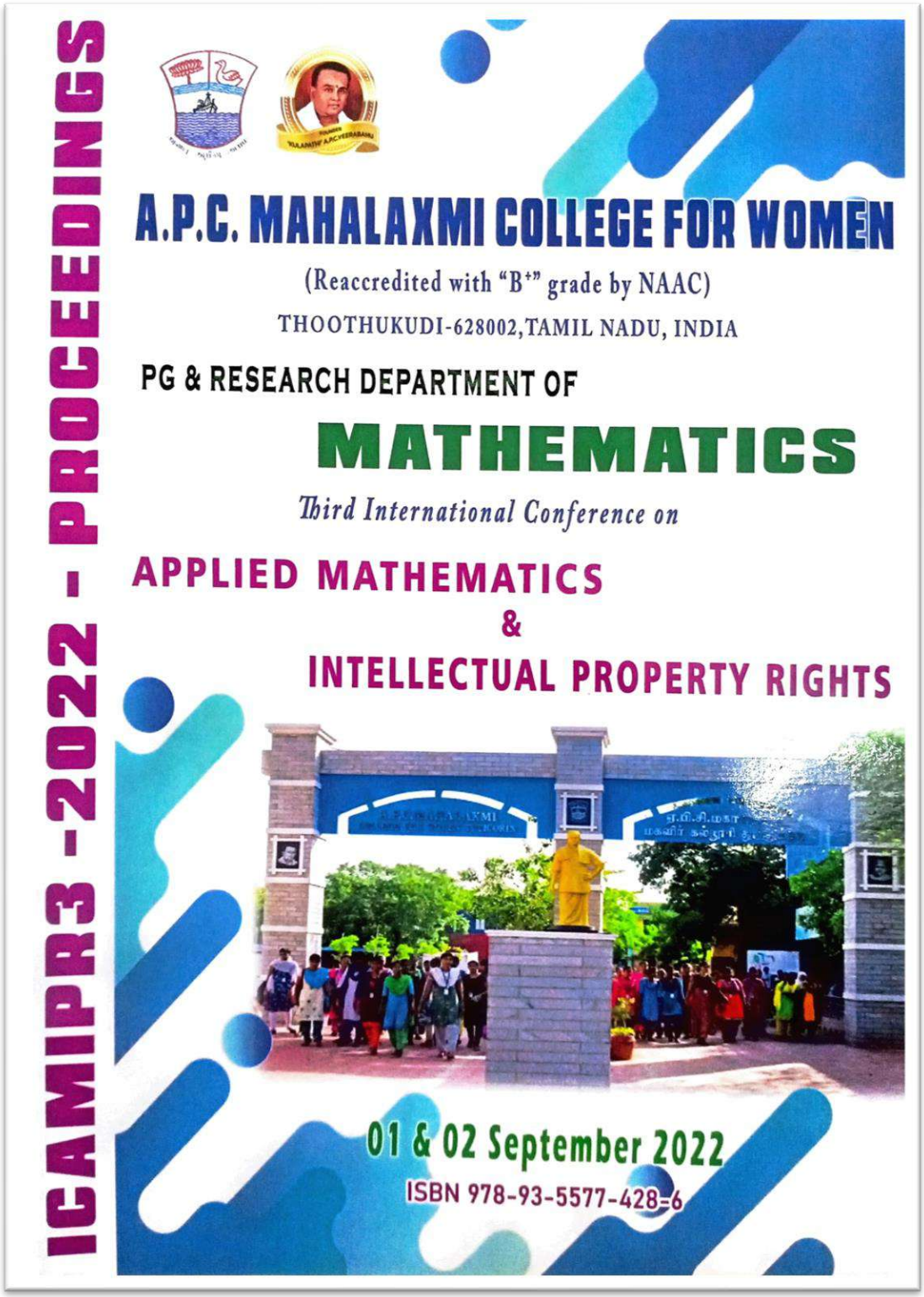

CONTENTS

11. Dr.V.Maheswari - Status Indices of Special Graphs

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Status Indices of Special Graphs

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ABSTRACT

In this paper, we compute the vertex status index, total status index, modified vertex status index, status inverse degree, status zeroth order index, F-status index and general vertex status index for Fan graph, Double Fan graph, Flower graph and SunFlower graph. Also we found total status polynomial, vertex status polynomial and F-status polynomial for these graphs.

Keywords: vertex status index, F-status index, status polynomial.

Mathematics Subject Classification: 05C05,05C07,05C12,05C35.

Introduction

Let $G = (V(G), E(G))$ be a simple, finite, connected graph. The degree $d_G(v)$ of vertex v is the number of vertices adjacent to v. The distance $d(u, v)$ between any two vertices u and v is the length of shortest path containing u and v. The status $\sigma(u)$ of a vertex u in a graph G is the sum of distances of all other vertices from u in G. For undefined term and notation, We refer [1].

A graph index or topological index is a numerical parameter mathematically derived from graph structure. In mathematical Chemistry, graph indices have found some applications in chemical documentation. Some different graph indices may be found in [2,3,4,5,6,10].

In [1], the vertex status index of a graph G defined as

$$S_v(G) = \sum_{u \in v(G)} \sigma(u)^2$$

The following status indices are proposed in [1]

The total status index of a graph G is defined as

$$T_s(G) = \sum_{u \in v(G)} \sigma(u)$$

The modified vertex status index of a graph G is defined as

$${}^{m}S_v(G) = \sum_{u \in v(G)} \frac{1}{\sigma(u)^2}$$

The status inverse degree of a graph G is defined as

$$SI(G) = \sum_{u \in v(G)} \frac{1}{\sigma(u)}$$

The status zeroth order index of a graph G is defined as

$$sz(G) = \sum_{u \in v(G)} \frac{1}{\sqrt{\sigma(u)}}$$

12. Dr.R.Rajeswari - Square sum lucky labelling of some algebraic graphs

Proceedings, Third International Conference on Applied Mathematics and Intellectual Property Rights, A.P.C.Mahalaxmi College for Women, Thoothukudi, 01 &02 September 2022

SQUARE SUM LUCKY LABELING OF SOME ALGEBRAIC GRAPHS

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ABSTRACT

Lucky labeling was studied by Ahai. A et.al and Akbari. S et.al. Lucky labeling is coloring of vertices arbitrarily such that sum of labels of all adjacent vertices of a vertex is not equal to the sum of labels of all adjacent vertices of any vertex which is adjacent to it. It has been used in transportation network, where pair wise connections are given some numerical values. And also in computational biology to model protein structures. Then proper lucky labeling has been introduced. Inspiring d-lucky labeling and many lucky labeling square sum lucky labeling has been introduce in this paper and studied for some algebraic graphs.

Keywords: Lucky Labeling, Square sum lucky labeling.

AMS Subject Classification: 05C25, 05C78.

1 Introduction

There are two variations of the zero-divisor graph. One is in the Beck definition in the year 1988, in which the vertices represent all elements of the ring [5]. In the year 1999, Anderson and Livingston slightly varied the graph, in which the vertices represent only the zero-divisor of the given ring [4]. Graph labeling was introduced by Alexander Rosa in the year 1967[14,8]. Rosa identified three types of labeling which was later renamed by Solomon Golomb[8]. Further developed by Grahamm and Slone in 1980[9]. In the field of Engineering and technology labelled graphs has its own application.

Graph coloring plays a vital role in graph theory. Karonski, Luczak and Thomason[11] brought proper labeling. The rule for coloring has been created from coloring the countries of map. Proper coloring is such that each vertices will receive color by adjacent vertices should not receive same color[12]. Proper lucky labeling has been applied in the research of computer science especially in [11, 7,6] Networking, clustering, image segmentation and also in the field of astronomy, circuit designing, data base management, x-ray crystallography, radar and missile guidance[15]. Lucky labeling was studied by Ahai. A et.al[1] and Akbari. S et.al[2]. Lucky labeling is coloring of vertices arbitrarily such that sum of labels of all adjacent vertices of a vertex is not equal to the sum of labels of all adjacent vertices of any vertex which is adjacent to it. It has been used in transportation network, where pair wise connections are given some numerical values. And also in computational biology to model protein structures. In recent years, graph theory has been associated to algebraic structures[3]. In paper Kandasamy and Smarandache[10] defined identity graphs of groups and semigroups and examined some special subgraphs. Inspiring d-lucky labeling[13] R-lucky labeling has been introduced in this papers and investigated for some zero-divisor graphs and some of the identity graphs.

2. Preliminaries

Definition 2.1: Zero-Divisor Graph: Let R be a commutative ring with identity 1 and let $Z(R)$ be its set of zero-divisors. We associate a $\Gamma(R)$ to R with vertices $Z^* = Z(R) - \{0\}$, the set nonzero zero-divisor of R, and for distinct $x, y \in Z(R)^*$, the vertices x and y are adjacent if

13. Dr.V.Maheswari - Ascending Pendant Domination Decomposition for the Graph $K1,m\odot K1$

Proceedings, Third International Conference on Applied Mathematics and Intellectual Property Rights, A.P.C.Mahalaxmi College for Women, Thoothukudi, 01 &02 September 2022

ASCENDING PENDANT DOMINATION DECOMPOSITION FOR THE GRAPH $K_{1,m} \odot K_1$

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Abstract

Let $G = (V, E)$ be a simple connected graph. We introduced Ascending Pendant Domination Decomposition of Graphs and is defined as a collection $\{G_1, G_2, G_3, \ldots, G_n\}$ of subgraphs of G such that every edge of G is exactly once in G_i, each G_i is connected and $\gamma_{pe}(G_i) = i + 1$, $1 \leq i \leq n$. In this paper, we have found that Ascending Pendant Domination Decomposition for the graph $K_{1,m} \odot K_1$.

Keywords: Dominating Set, Pendant Dominating Set, Pendant Dominating Set and Pendant Domination Decomposition.

AMS Subject Classification: $05C69$ and $05C70$

1.Introduction

Let $G = (V, E)$be a simple connected graph. All the graphs considered here are finite and undirected. A vertex of degree zero is called an isolated vertex and a vertex of degree one is called a pendant vertex. An edge incident with a pendant vertex is called a pendant edge. Pendant Domination in some Generalised Graphs was introduced by Nayaka S.R Puttaswamy and S.Purushothama **[6]**. Ascending Domination Decomposition of Subdivision of Graphs was introduced by K. Lakshmiprabha and K. Nagarajan **[5]**. We introduced the concept of Ascending Pendant Domination Decomposition in **[3]**. We found the Ascending Pendant Domination Decomposition for the graph $K_{1,m} \odot K_1$.

Definition 1.1.

A Dominating set S in G is called a Pendant Dominating Set if $< S >$ contains atleast one pendant vertex. The minimum cardinality of a Pendant Dominating Set is called the pendant domination number denoted by $\gamma_{pe}(G)$.

Definition 1.2.

The corona $G_1 \odot G_2$ of two graphs G_1 and G_2 is defined as the graph G obtained by taking one copy of G_1 (which has $p_1$vertices) and p_1 copies of G_2 and then joining the i^{th} vertex of $G_1$to every vertex in the i^{th} copy of G_2.

Definition 1.3.

A Decomposition $(G_1, G_2, \ldots, G_n)$ of G is said to be Ascending Pendant Domination Decomposition (APDD) if

(i) Each G_i is connected

(ii) $\gamma_{pe}(G_i) = i + 1, 1 \leq i \leq n$.

2. Main Results

Theorem 2.1. The graph $K_{1,m} \odot K_1$ admits APDD into n −parts iff $m = \frac{(n-1)(n+2)}{2}$, $n \geq 2$ and $m = \frac{n(n+1)}{2}$, $n \geq 1$.

14. Dr. M. Muthukumari, Dr. K. Rajendra Suba - p* Open Set and $\beta^* p^*$ Open Sets in Generalized Topology

p* OPEN SET AND β*p* OPEN SETS IN GENERALIZED TOPOLOGY

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Abstract:

In this paper p* open sets, and β*p* open sets are introduced and properties are studied.

INTRODUCTION:

In the year 2002, A.Csaszar introduced the concept of Generalized topology[1]. In the year 1982, A.S.Mashhour, M.E.Abd El-Honsef and S.N.El.Deeb introduced the concept of pre open sets[2] in a topological space. In the year 1983, Abd El-Monsef M.E., El-Deeb S.N. and Mahmoud R.A. introduced the concepts of β open sets [3] in a topological space. In the Year 2020, M.Muthukumari introduced the concept of β* open set [5] in generalized topological space. In this paper we define p* open set, β* p* open sets. Properties are studied.

1.PRELIMINARIES:

Definition 1.1 : Generalized Topology

Let X be a non empty set. Let μ ⊂ P(X). μ is called a generalized topology on X if 1. Φ∈ μ

2. μ is closed under arbitrary union. Elements of μ are called μ open sets or simple open sets. The interior of a set A is denoted by i(A).

Definition 1.2: Pre open set

Let X be a topological Space. A set A⊂X is called a pre open set if A ⊂ int cl A

Let A ⊂X. The union of all pre open sets contained in A is called pre interior of A and it is denoted by $i_p(A)$. $i_p(A)$=U{B/B is pre open and B⊂A}

Definition 1.3: β open set

A set A ⊂X is called a β open set if A ⊂ cl int cl A.

Let A⊂X. The union of all β open sets contained in A is called β interior of A and it denoted by $i_\beta(A)$.

Result1.4: A is open ⇒ A is pre open ⇒A is β open

Definition 1.5: Continuous function Let f : X →Y be a function where X and Y are generalize topological spaces . f is called a Continuous function if inverse image of every open set in Y i open set in X. V is open in Y ⇒ $f^{-1}(V)$ is open in X.

Definition 1.6: Pre Continuous function Let f : X →Y be a function where X and Y ar generalized topological spaces. f is called a pre continuous function if inverse image of ever open set in Y is pre open in X. V is open in Y ⇒f^{-1} (V) is pre open in X

15. Dr. K. RajendraSuba, Dr, M. Muthukumari – Quasi β^*-Open & Quasi β^*- Closed Functions in Topological Spaces

Proceedings, Third International Conference on Applied Mathematics and Intellectual Property Rights, A.P.C.Mahalaxmi College for Women, Thoothukudi, 01 &02 September 2022 74

QUASI β* - OPEN & QUASI β* - CLOSED FUNCTIONS IN TOPOLOGICAL SPACES

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ABSTRACT

The aim of this paper is to define a new class of functions namely quasi β* - open functions and quasi β*- closed functions and investigate some of its fundamental properties and its characterizations.

Keywords and phrases: quasi β*- open functions and quasi β*- closed functions

1. INTRODUCTION

Functions and of course open functions stand among the most important notions in the whole of mathematical science. Many different forms of open functions have been introduced over the years. Various interesting problems arise when one considers openness. Its importance is significant in various areas of mathematics and related sciences. Recently, P. Anbarasi Rodrigo , K.Rajendra Suba [1] have introduced the concept of β* - open sets and studied their properties. In this paper, we introduce quasi β*- open functions and quasi β*- closed functions and discuss some of its properties.

2. PRELIMINARIES

Throughout this paper (X, τ), (Y, σ) and (Z, η) or X , Y , Z represent non-empty topological spaces on which no separation axioms are assumed unless otherwise mentioned. For a subset A of a space (X, τ), cl(A) and int(A) denote the closure and the interior of A respectively. The power set of X is denoted by P(X).

Definition 2.1: A subset A of a topological space X is said to be a β*- ***open*** [1] if $A \subseteq$ cl(int*(cl(A))).

Definition 2.2: A be a subset of a topological space X. Then β* - **interior** [1] of A is defined as the union of all β* - open subsets of A.

Definition 2.3: Let A be a subset of a space X. Then β* -**closure** [1] of A is defined as the intersection of all β* - closed sets in X containing A.

Definition 2.4: A map $f : (X, \tau) \to (Y, \sigma)$ is said to be ***pre*** β* -***open*** [3] if the image of every β* - open set of X is β* - open in Y.

Definition 2.5: A map $f: (X, \tau) \to (Y, \sigma)$ is called a β* - **closed** [3]if image of each closed set in X is β* - closed in Y.

Definition 2.6: A function $f: (X, \tau) \to (Y, \sigma)$ is called a β* - **continuous**[4] if $f^{-1}(O)$ is a β* - open set of (X, τ) for every open set O of (Y, σ).

Definition 2.7: A function $f: (X, \tau) \to (Y, \sigma)$ is said to be β* - **Irresolute** [4] if $f^{-1}(O)$ is a β* - open in (X, τ) for every β* - open set O in (Y, σ).

16. Dr.V.Mahalakshmi - Q-Fuzzy Subnear Subtraction Semigroups of Near-Subtraction Semigroups

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Q-FUZZY SUBNEAR-SUBTRACTION SEMIGROUPS OF A NEAR-SUBTRACTION SEMIGROUPS

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ABSTRACT

In this paper, we explore the concept of Q-fuzzy subnear-subtraction semigroups of a near-subtraction semigroups. After basic definitions of Q-fuzzy subnear-subtraction semigroups, we have discussed some of its primary properties with examples. The study will expand scope of further research in Q-fuzzy subnear- subtraction semigroups.

Keywords: Q-fuzzy subnear-subtraction semigroups, near-subtraction semigroups, fuzzy subnear-subtraction semigroups.

Mathematics Subject Classification. 03E72, 08A72

Introduction

The theory of fuzzy set was introduced by Zadeh[5] in 1965, many new mathematical constructions and theories treating imprecision, inexactness, ambiguity and uncertainty have been developed. Some of these constructions and theories are extensions of fuzzy set theory. Dheena[2] introduced the concept Near-subtraction semigroups in algebraic theory. After this concept, many researchers start investigated many related concepts in Near-subtraction semigroups. In near-ring theory, Salah Abou Zaid[4] introduced the theory of a fuzzy subnear-ring. Motivated by this concept, In this paper, with a new idea, we introduced Q-fuzzy subnear-subtraction semigroups in Near-subtraction semigroups. Also discuss some of their properties. This concept motivates study of different types of concepts in Near-subtraction semigroups in algebraic theory.

2. Preliminaries

Here, we given the basic definitions related to the article

Definition:2.1. A non-empty set X together with a binary operation "−" is said to be a subtraction algebra if it satisfies the following:

(1) $x - (y - x) = x$.
(2) $x - (x - y) = y - (y - x)$.
(3) $(x - y) - z = (x - z) - y$, for every $x, y, z \in X$.

Definition:2.2. A non-empty set X is called a near-subtraction semigroup, if it satisfies the following conditions:

17. Dr. K. Palani - Edge Domination Number of some new Graphs

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EDGE DOMINATION NUMBER OF SOME NEW GRAPHS

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ABSTRACT

Let G=(V,E) be a (p,q) graph. A subset D of E(G) is said to be an edge dominating set of G if every edge in E-D is adjacent to atleast one edge in D. An edge dominating set is said to be a minimal edge dominating set if it does not contain any other edge dominating set as a proper subset. The Cardinality of a minimum edge dominating set is called the edge domination number of G and is denoted as $\gamma'(G)$. In this paper, the edge domination number of Different Ladder graphs, Lotus graph, Y-tree and Some Star related graphs are evaluated.

Keywords: edge dominating set, edge domination number, lotus graph, star graph, Y-tree .

AM Subject Classification: 05C69

1.Introduction:

Graph theory is a growing area as it is applied to different branches of mathematics, science and technology. One of the most important topics that graph theory deals with is the topic of domination. There are two methods for calculating the domination in graphs, the first is by the set of vertices and the second is by the set of edges.

In this work, the domination will be calculated by means of the set of edges. The concept of edge domination is introduced by Mitchell and Hedetniemi [7]. Arumugam and Velammal [1] studied the edge domination number of graphs. In this paper, the edge domination number of Different Ladder graphs, Lotus graph, Y-tree , Some Star related graphs are evaluated.

Definition 1.1. Lotus is the graph obtained from a fan by subdividing the edges of the path and attaching a new vertex to the apex. It is denoted as LO_n. LO_n is obtained from F_n.

Definition 1.2. A **Y-tree** is the graph obtained from a path P_n by appending an edge to a vertex of the path P_n adjacent to an end vertex. It is denoted as Y_{n+1}.

Definition 1.3. The Cartesian product of P_n and K_2 is called a **ladder graph** and is denoted as L_n.(i.e) $L_n = P_n \times K_2$.

Definition 1.4. A **triangular ladder** $TL_n, n \geq 2$ is a graph obtained from a ladder L_n by adding the edges $u_i v_{i+1}$ for $1 \leq i \leq n-1$, where u_i and v_i, $1 \leq i \leq n$ are the vertices of the two base paths of L_n. It is denoted as TL_n.

Definition 1.5. A **diagonal ladder** graph DL_n, $n \geq 2$ is obtained from a ladder graph L_n by adding the edges $u_i v_{i+1}$ and $u_{i+1} v_i$ for $1 \leq i \leq n-1$. It is denoted as DL_n.

18. Dr.V.Mahalakshmi - Inteval Valued Fuzzy Weak Biideals of near Subtraction Semigroup

Proceedings, Third International Conference on Applied Mathematics and Intellectual Property Rights, A.P.C.Mahalaxmi College for Women, Thoothukudi, 01 &02 September 2022 87

INTERVAL VALUED FUZZY WEAK BI-IDEALS OF NEAR-SUBTRACTION SEMIGROUPS

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Abstract

The objective of this paper is to introduce and study the notion of Interval valued fuzzy weak bi-ideals in near-subtraction semi groups. We will investigate along with some operations such as Intersection, Direct product etc. on them

Keywords: i-v fuzzy sets, i-v fuzzy sub algebra, i-v fuzzy Weak Bi-ideals.
2020 Mathematics Subject Classification: 03E72,08A72 .

1 Introduction

Zadeh[15] introduced the notion of interval valued fuzzy subsets (in short i-v fuzzy subsets) where the values of the membership functions are closed intervals of numbers instead of single members. Lee and C. H. Park[6] introduced the notion of a fuzzy ideal in subtraction algebras and give some conditions for a fuzzy set to be a fuzzy ideal in subtraction algebras.

Through this, we Conceptualize i-v fuzzy weak bi-ideal of near-subtraction semigroup and have investigated their related properties.

2 Preliminaries

This Section begins with some basic definitions

Definition 2.1[11]

Consider X as a non-empty set together with the binary operation '-' and'•' is said to be a right(left) ***near-subtraction semigroup*** if

(i) (X ,-)is a subtraction algebra

(ii) (X ,•)is a semigroup

(iii)(p-q)r=pr-qr for all p,q,r in X.

It is clear that 0p=0 for all p in X.

Definition 2.2[12]

A fuzzy set μ in *X* is said to be ***fuzzy X-subalgebra*** of *X* if for each p,q∈X

(i)μ(p-q)≥min{μ(p),μ(q)}

(ii) μ(pq)≥ μ(q)

(iii) μ(pq)≥ μ(p)

(i)and (ii) gives **fuzzy *left X-subalgebra of X*** and Conditions (i) and (iii) gives **fuzzy *right X-sub algebra*** of X.

19. S. V. Vani – Some Topological Concepts in Q-Topological Spaces

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SOME TOPOLOGICAL CONCEPTS IN Q-TOPOLOGICAL SPACES

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ABSTRACT

The main focus of this study is to present the concepts of Q-topological spaces. We introduce the fundamental concepts in classical topological spaces for Q-topological spaces and investigate some of their basic properties. Further, we define quint-semi alpha (in short Q-s$_{\alpha}$) open set and quint-semi alpha (in short Q-s$_{\alpha}$) continuity via Q-topological spaces. By defining, Q-s$_{\alpha}$ open set, we furnish some suitable examples and formulate some basic results on Q- topological spaces.

KEY WORDS: Q-topological space, Q-open set, Q-closed set, Q-continuity, Q-s$_{\alpha}$-open set, Q-s$_{\alpha}$-closed set, Q-s$_{\alpha}$-continuity.

AMS Mathematics Subject Classification - (MSC2020): 54A05

I.INTRODUCTION

In recent years the concept of a single topological space has been extended to bi-topological space (a non-vacuous set X endowed with two topologies $\tau 1$ and $\tau 2$), tri-topological space (a non-vacuous set X endowed with three topologies $\tau 1$,$\tau 2$ and $\tau 3$) and quad- topological space (a non-vacuous set X endowed with four topologies $\tau 1$,$\tau 2$,$\tau 3$ and $\tau 4$). The concept of a bi-topological space was first introduces by Kelly[1]. Tri-topological space was initiated by Kovar[2]. Quad-topological space was investigated by Mukundan[3]. Tapi and Sharma[4] studied the idea of Q-B continuous functions in quad topological spaces. As a natural generalization of these concepts, we introduce a new concept called Q-topological space. A Q-topological space (X,τ) is a set X equipped with 5-tuple of topologies $\tau=(\tau 1,\tau 2,\tau 3,\tau 4,\tau 5)$- called Q topology on X. In this paper we introduce the concept of topological structures with Q topology and define new types of open (closed) sets namely, Q semi alpha (Q-s$_{\alpha}$) open set in Q topological spaces. We also introduce the notion of Q-s$_{\alpha}$- continuous function in Q- topological spaces.

II. PRELIMINARIES

Definition 2.1: Let (X,τ_Q) be a Q-topological space. Elements of τ_Q; $Q \in \{1,2,3,4,5\}$ are called τ_Q-open sets and their relative complements are called τ_Q-closed sets.

Definition 2.2: Let (X, τ_Q) be a Q-topological space. A subset A of X is called Q-open if $A \in \cup\tau_Q$, $Q \in \{1,2,3,4,5\}$ and its complement is said to be Q-closed.

The collection of all Q closed sets is denoted as $\check{C}_Q(A)$.

The collection of all Q open sets is denoted as $\tilde{O}_Q(A)$.

Definition 2.3: Let (X, τ_Q) be a Q-topological space. Let A be a subset of X. The Q-closure of A, denoted by $cl_Q(A)$ is defined as the intersection of all Q-closed sets of X containing A. Thus, if $\{\check{C}_\alpha : \alpha \in I\}$ is the collection of all Q-closed sets in X containing A, then $cl_Q(A) = \cap\, \alpha \in I\, \check{C}_\alpha$

20. Dr.K.BalaDeepaArasi - Injective Anti Homomorphism of a Quasi Weak Commutative Semi Group

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INJECTIVE ANTI HOMOMORPHISM OF A QUASI WEAK COMMUTATIVE SEMI GROUP

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ABSTRACT

This article reviews about some research work done about the structure of regular semigroups with a special emphasis on its idempotents. The role of anti homomorphism over a quasi-weak commutative semi group is discussed. Some basic properties of quasi weak commutative semi group have been observed. The relation between anti homomorphism and homomorphism of a particular semi group G is explained. The ideology of anti-homomorphic images of various commutative semi groups under the influence of existence of idempotents, regularity, inverses and other factors have been elucidated.

Keywords: Regular semi groups, quasi weak commutative, idempotents, regularity, inverses, commutative semi groups.

1.INTRODUCTION

Semi group sub structures has found it's own way of development in recent years. Commutative semigroups can be considered as the core semigroups since groups are regular semigroups with a unique idempotent. The idempotents play a predominant role in the structure of commutative semigroups. Several authors have extensively studied about its properties. Locally inverse semigroups and orthodox semigroups are regular generalisations of inverse semigroups. A regular semigroup T with set E of idempotents is called locally inverse if eTe is an inverse semigroup for every e in E. An orthodox semigroup is a regular semigroup in which the idempotents form a sub semigroup. Several researchers have studied the structure of regular semigroup based on certain identities satisfied by the idempotents.

2.PRELIMINARIES

Definition 2.1

A group G is said to be a *Semigroup* if it is closed and associative with respect to the operations as defined in the group.

Definition 2.2

A semi group G acquaints *zero-symmetricity* if $n0 = 0$ for all $n \in G$.

Definition 2.3

$f: G \longrightarrow G$ is said to be an *anti homomorphism*, where G is a semi group, if the following conditions are satisfied:

(i) $f(xy) = f(y)\, f(x)$
(ii) $f(x+y) = f(y) + f(x)$, for all x, y in G.

Definition 2.4

G is said to be *commutative* if $ab = ba$ for all a, b in G.

Definition 2.5

A semi group is said to be *cancellative* in general if both the left and right cancellative laws hold good.

21. Dr. K. Palani – Geodetic Number of More Graphs

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GEODETIC NUMBER OF MORE GRAPHS

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ABSTRACT

Let G = (V,E) be a (p,q) graph. A geodetic set of a graph G is a subset D of V(G) such that every vertex in V-D lies in a geodetic joining two vertices of D. A geodetic set is said to be minimal geodetic set if it does not contain any other geodetic set as a proper subset. The cardinality of a minimum geodetic set is called the geodetic number of G and is denoted as g(G). In this paper we evaluate the geodetic number of some special graphs like Lotus graph, Some Star graph, Sunflower graph, Some Triangular Snake graph, etc...

Keywords: geodetic set, geodetic number, lotus graph, sunflower graph, star graph.
AM Subject Classification : 05C12

1. Introduction:

Graph theory plays a vital role in various fields. Geodetic domination is one of the important area in graph theory. There are interesting applications of geodetic concepts to the problem of designing the route for a shuttle and communication network design.

A geodetic set of a graph G is a subset D of V(G) such that every vertex in V-D lies in a geodetic joining two vertices of D. A geodetic set is said to be minimal geodetic set if it does not contain any other geodetic set as a proper subset. The cardinality of a minimum geodetic set is called the geodetic number of G.

The geodetic number of a graph was introduced by F.Buckley and F.Harary[1] and further in [2] and [7]. In this paper we evaluate the geodetic number of lotus graph, cystar graph, sunflower graph, triangular snake graph, etc...

1.1. Definition: Lotus is the graph obtained from a fan by subdividing the edges of the path and attaching a new vertex to the apex. The lotus graph obtained from F_n is denoted as LO_n.

1.2. Definition: Cystar is the graph obtained from C_m and $K_{1,n}$ by identifying the vertex u_1 of C_m with the apex v of $K_{1,n}$. It is denoted as $C_m,K_{1,n}$.

1.3Definition: Sunflower is the graph obtain from wheel by joining every two consecutive vertices of the cycle to a new single vertex. It is denoted as SFl_n.

1.4.Definition: The **triangular snake** is obtained from the path P_n by replacing each edge of the path by a triangular C_3. It is denoted as TS_n

1.5. Definition: A vertex is **simplicial (or extreme)** if its neighbourhood induces a complete graph.

1.6. Theorem: Any geodetic set contains all the extreme vertices.

22. Dr.V.Mahalakshmi - Bipolar Q-Fuzzy Subnear ring of a near ring

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BIPOLAR Q FUZZY SUBNEARRINGS OF A NEAR RING

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ABSTRACT

The main theme of this manuscript is to study about Bipolar Q Fuzzy Subnearrings of a near ring. Based on concepts, we analysed some properties and results for development of theorem. We also initiate the study of some algebraic properties.

KEY WORDS: Near Ring, Subnearrings, Fuzzy Subnearrings, Q-Fuzzy, Bipolar.

1. Introduction

Zadeh[4] introduced the concept of fuzzy set as a new mathematical tool for dealing with uncertainties. There are several kinds of fuzzy set extensions in the fuzzy set theory, for example, intuitionistic fuzzy set, interval valued fuzzy set soft fuzzy set, rough fuzzy set, etc. The study of nearrings was started by Pilz Gunter [3]. The theory of nearrings is a growing branch of Algebra. Anthony J.M and Sherwood. H[2] defined a fuzzy group refined. Abou-zoid[1] introduced the concept of Q-fuzzy subnearrings.

2. Preliminaries:

Definition: 2.1 A non-empty set R with the binary operations '+' and '•' is called as near ring if

(i) (R,+) is a group (not necessarily abelian)
(ii) (R, •) s a semi group
(iii) x. (y+z) =x.y+x.z for all x, y, z ∈R.

Definition: 2.2 Let X be a non-empty set. A fuzzy subset A of X is a function A: X→ [0, 1].

Definition: 2.3 The standard union of two fuzzy subsets A and B of a set X is defined by (A∪B) (x) =max {A(x), B(x)} for all x in X.

Definition: 2.4 The standard intersection of two fuzzy subsets A and B of a set X is defined by (A∩B) (x) =min {A(x), B(x)} for all x in X.

Definition: 2.5 Let R be a nearing. A fuzzy Subnearring of R is a fuzzy set μof R such that

(i) $\mu(x-y) \geq \min\{\mu(x), \mu(y)\}$
(ii) $\mu(xy) \geq \min\{\mu(x), \mu(y)\}$ for all x, y ∈R

Definition: 2.6 Let X be the universe of discourse. A bipolar-valued fuzzy set φ in X is an object having the form $\varphi = \{(x, \mu^+_{\varphi}(x), \mu^-_{\varphi}(x)) | x \in X\}$ where $\mu^+_{\varphi}: X \to [0, 1]$ and $\mu^-_{\varphi}: X \to [-1, 0]$ are mappings. The positive membership degree $\mu^+_{\varphi}(x)$ denoted the satisfaction degree of an element x to the property corresponding to a bipolar fuzzy valued set $\varphi = \{(x, \mu^+_{\varphi}(x), \mu^-_{\varphi}(x)) | x \in X\}$, and the negative membership degree $\mu^-_{\varphi}(x)$ denoted the satisfaction degree of an element x to some implicit counter- property of $\varphi = \{(x, \mu^+_{\varphi}(x), \mu^-_{\varphi}(x)) | x \in X\}$.

23. Dr.K.BalaDeepaArasi - On rc*-closed sets in topological spaces

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ON rc*- CLOSED SETS IN TOPOLOGICAL SPACES

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ABSTRACT

The aim of this paper is to introduce the notation of rc*- closed sets in topological spaces and study their basic properties. A subset A of a topological spaces X is said to be rc*- closed set if rcl(A)□H and H is c*- open. Also we obtain several characterizations of rc*- closed sets and some preservation propositions for rc*- closed sets.

KEY WORDS: c*- open, regular closure, rc*- closed.

1.INTRODUCTION

In 1937, Stone introduced the notation of regular open sets. In 1963, Norman Levine introduced semi-open sets in topological spaces. In 1968, the notion of π-open sets was introduced by Zaitsev which are weak form of regular open sets. In 1970, Levine initiated the study of generalized closed (briefly g-closed) sets. In 2000, Sundaram and John introduced the notion of w-closed sets. In 2017, Malathi and Nithyanantha Jothi introduced the concepts of c*-open and generalized c*-closed sets in topological spaces. In this paper we introduce rc*-closed sets in topological spaces and study its basic properties.

Section 2 deals with the preliminary concepts. In section 3, rc*-closed sets are introduced and their basic properties are discussed.

2.PRELIMINARIES

Throughout this paper X denotes a topological space on which no separation axiom is assumed. For any subset A of X, cl(A) denotes the closure of A, int(A) denotes the interior of A, rcl(A) denotes the regular-closure of A , αcl(A) denotes the α-closure of A, scl(A) denotes the semi-closure of A. The following definitions are very useful in the subsequent sections.

Definition:2.1 A subset A of a topological space X is called

i. a α-open set [9] if $A \subseteq int(cl(int(A)))$ and α-closed set if $cl(int(cl(A))) \subseteq A$.
ii. a regular open set [12] if A=int(cl(A)) and regular closed set if cl(int(A))=A.
iii. a π-open set[15] if A is the union of regular open sets and π-closed set if A is the intersection of regular closed sets.

Definition:2.2 [10] For any subset A of X, $rcl(A)=\cap\{B:B\subseteq A, B \text{ is a regular closed subset of } X\}$.

Definition:2.3 [7] A subset A of a topological space X is said to be a c*-open set if $int(cl(A)) \subseteq A \subseteq cl(int(A))$.

Definition-:2.4 A subset A of a topological space X is called

i. a generalized closed set (briefly, g-closed) [5] if $cl(A)\subseteq U$ whenever $A\subseteq U$ and U is open in X.

24. Dr.V.Maheswari - Isolate Domination Decomposition of Graphs

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Isolate Domination Decomposition of Graphs

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ABSTRACT:

Let $G = (V, E)$ be a simple connected graph. In this paper, we introduce Isolate Domination Decomposition(IDD) of a graph G. An IDD of a graph G is a collection $\psi = \{G_1, G_2, \dots, G_m\}$ of subgraphs of G such that every edge of G belongs to exactly one G_i, each G_i is connected and it contains atleast one edge and $\gamma_o(G_i) = i, 1 \leq i \leq n$. Also we obtain that path and cycle admits Isolate Domination Decomposition.

Keywords: Dominating set, Isolate Dominating set, Decomposition and Isolate Domination Decomposition.

AMS Subject Classification: 05C69 and 05C70.

1 INTRODUCTION:

Let $G = (V, E)$ be a simple connected graph where n and q denote the number of vertices and edges of a graph G respectively. All the graphs considered here are finite and undirected. A vertex of degree zero is called an isolated vertex and a vertex of degree one is called a pendant vertex. A graph with an isolated vertex is disconnected. The subgraph induced by a set S of vertices of a graph G is denoted by $\langle S \rangle$ with $V(\langle S \rangle) = S$ and $E(\langle S \rangle) = \{uv \in E(G): u, v \in S\}$. The concept of isolate domination was introduced by I. Sahul Hamid and S. Balamurugan[2] and further studied by Benjier H. Arriola. The concept of ascending domination decomposition was introduced by K. Lakshmiprabha and K. Nagarajan[4]. The concept of ascending pendant domination decomposition was introduced by V. Brishni, V. Maheswari and K. Bala Deepa Arasi[5]. Motivated by these concepts we introduce a new concept of Isolate Domination Decomposition(IDD). In this paper, we obtain that path and cycle admits IDD.

1.1 Definition: A dominating set for a graph G is a subset D of V such that every vertex not in D is adjacent to atleast one vertex in D. A dominating set D is said to be a minimal dominating set if no proper subset of D is a dominating set. The cardinality of a minimal dominating set of a graph G is called the domination number of G and is denoted by $\gamma(G)$.

1.2 Definition: A decomposition of a graph G is a collection ψ of connected edge disjoint subgraphs $G_1, G_2, \dots, G_m$ of G such that every edge of G belongs to exactly one G_i.

1.3 Definition[2]: A dominating set S of a graph G is said to be an isolate dominating set of G if $\langle S \rangle$ has atleast one isolated vertex. An isolate dominating set S is said to be a minimal isolate dominating set if no proper subset of S is an isolate dominating set. The cardinality of a minimal isolate dominating set of G is called the isolate domination number of G and is denoted by $\gamma_0(G)$.

1.4 Definition: A path P_n of length n in a graph G is a sequence $(u_1, u_2, \dots, u_n)$ of distinct vertices such that for $1 \leq i \leq n-1$, the vertices u_i and u_{i+1} are adjacent.

25. Dr.V.Mahalakshmi - On Q-Fuzzy X-Subalgebra of Near Subtraction Semigroup

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On Q – Fuzzy X – Subalgebra of Near - Subtraction Semigroup

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ABSTRACT

In this manuscript we study and examined the concept of Q-fuzzy X-subalgebra of near subtraction semigroups. In this paper we attempt to define the notation of Q-fuzzy X-subalgebra of near subtraction semigroups. We will discuss fundamentals and algebraic properties of Q-fuzzy X-subalgebra in near subtraction. The purpose of our research to understand and analyse the characteristic of Q-fuzzy X-subalgebra in near subtraction semigroup.

Definition 1.1

A non-empty set X together with two binary operations "-" is said to be a subtraction algebra if it satisfies the following:

(1) x-(y-x) = x

(2) x-(x-y) = y-(y-x)

(3) (x-y)-z = (x-z)-y , for every x,y,z ∈ X.

Definition 1.2

A non-empty set X is called a near-subtraction semigroup, if it satisfies the following conditions:

(1) (X -) is a subtraction algebra.

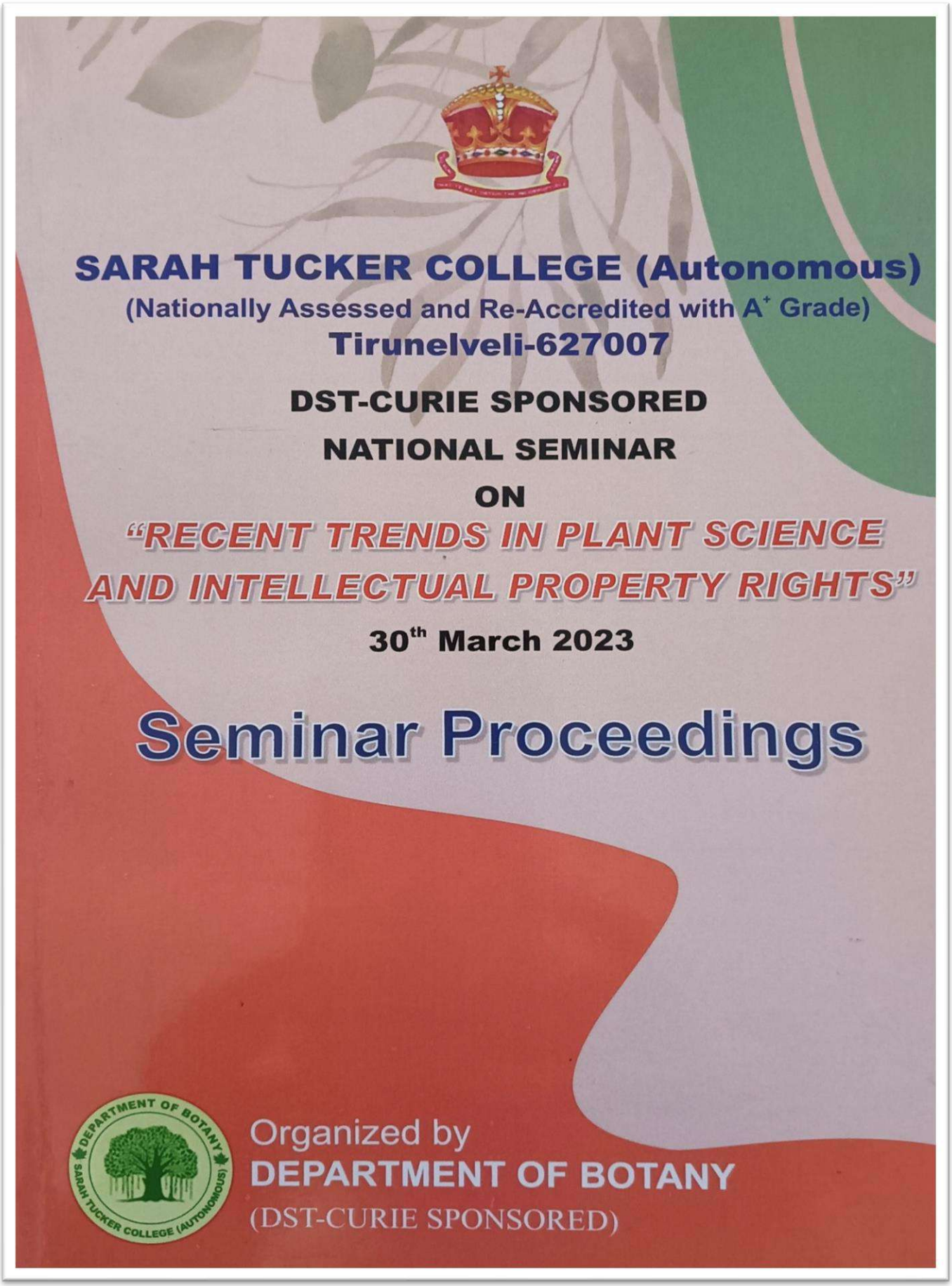
(2) (X .) is a semigroup

(3) x.(y-z) = x.y - x.z, for every x,y,z ∈ X. (left Distributive law)

(4) (x-y).z = x.z - y.z, for every x,y,z ∈ X. (right Distributive law)

If A satisfies (1), (2) & (3) is called a left near-subtraction semigroup where as A satisfies (1), (2) & (4) is called a right near-subtraction semigroup.

Definition 1.3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26. V. Sornalakshmi – Antimicrobial Activity of Selective Native Medicines used in Siddha System

ANTIMICROBIAL ACTIVITY OF SELECTIVE NATIVE MEDICINES USED IN SIDDHA SYSTEM

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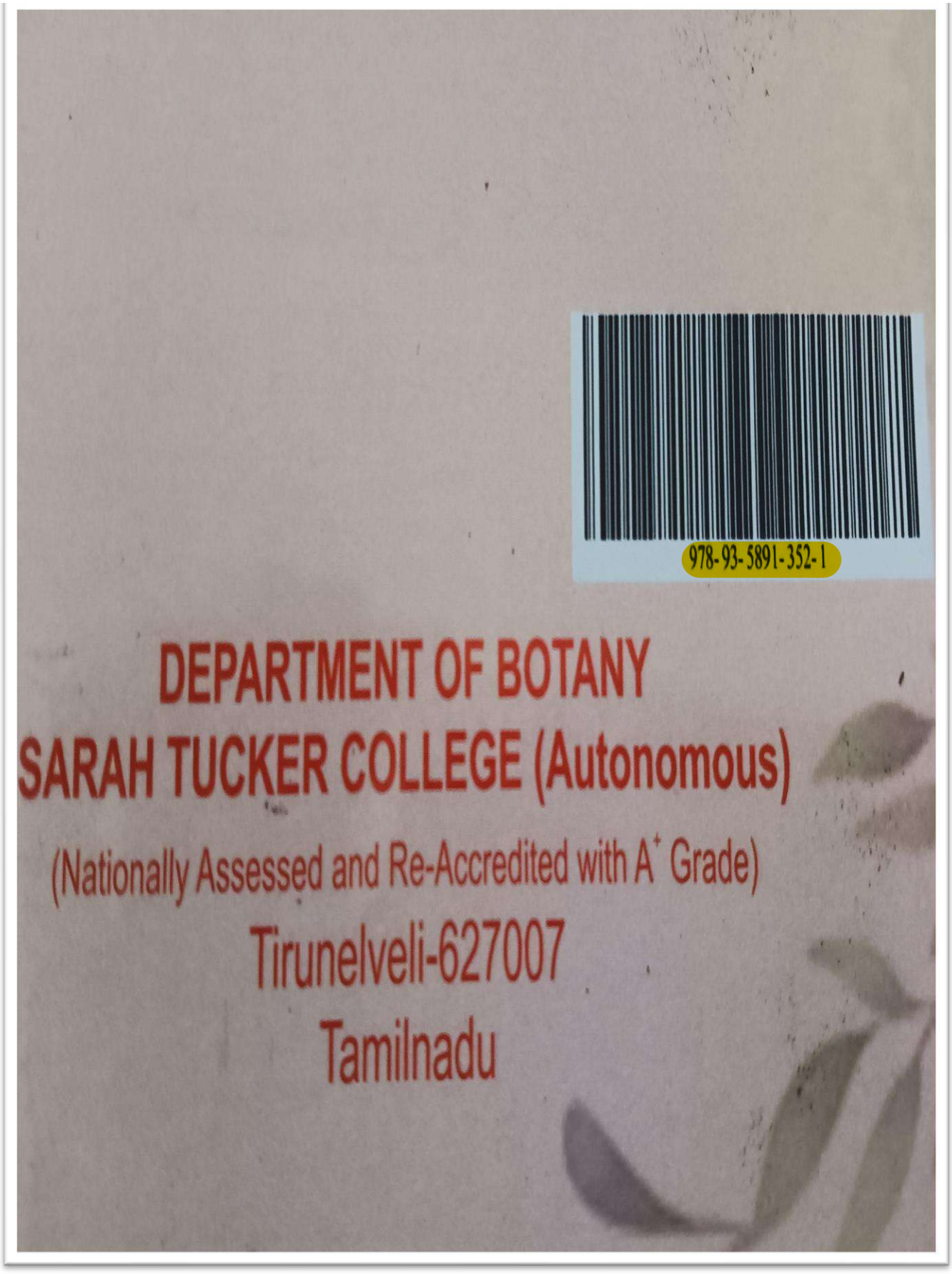
Abstract

Antibiotic resistance is one of the chief complications facing humanity. So, the requirement for novel antimicrobials has been augmented dramatically. Plants are considered as one of the greatest hopeful resources for new antimicrobials finding. In the present study four commonly used native drugs from siddha system of medicine namely Adhimathuramkarippan, Adathodaimanappadu, Vasambuchuttakari and Matthan oil was tested against *Salmonella abony, Proteus vulgaris, Pseudomonas sp, Cellulomonas fimi* and *Bacillus subtilis*. Potential antibacterial activity was recorded against *Salmonella abony* and *Cellulomonas fimi* by Adhimathuramkarippan, Adathodaimanappadu respectively. No activity was recorded by the drug Matthan oil.

Keywords: Native medicine, Antibacterial, *Salmonella abony, Cellulomonas fimi*

INTRODUCTION

The history of herbal medicines is as old as human civilization. Siddha system of medicine is one of the oldest and widely used all over the world. The system of medicine other than allopathy are branded as alternative system of medicine. Ayurveda, Unani and Siddha are traditional system of medicine. In traditional system of medicine 40% ingredients are obtained from plants. Thus, there is a great demand for medicinally important plants. According to all India ethnobotanical survey conducted by Ministry of environment, there are about 6000 species of medicinal plants in India which can be used by traditional practitioners and other village people. In recent years, natural products have been the aim of many investigations, and the direct use of these products has been encouraged in the pharmaceutical and agricultural industries (Sarkar et al 2006; Russel 2006; Rodríguez-Garcia et al 2019)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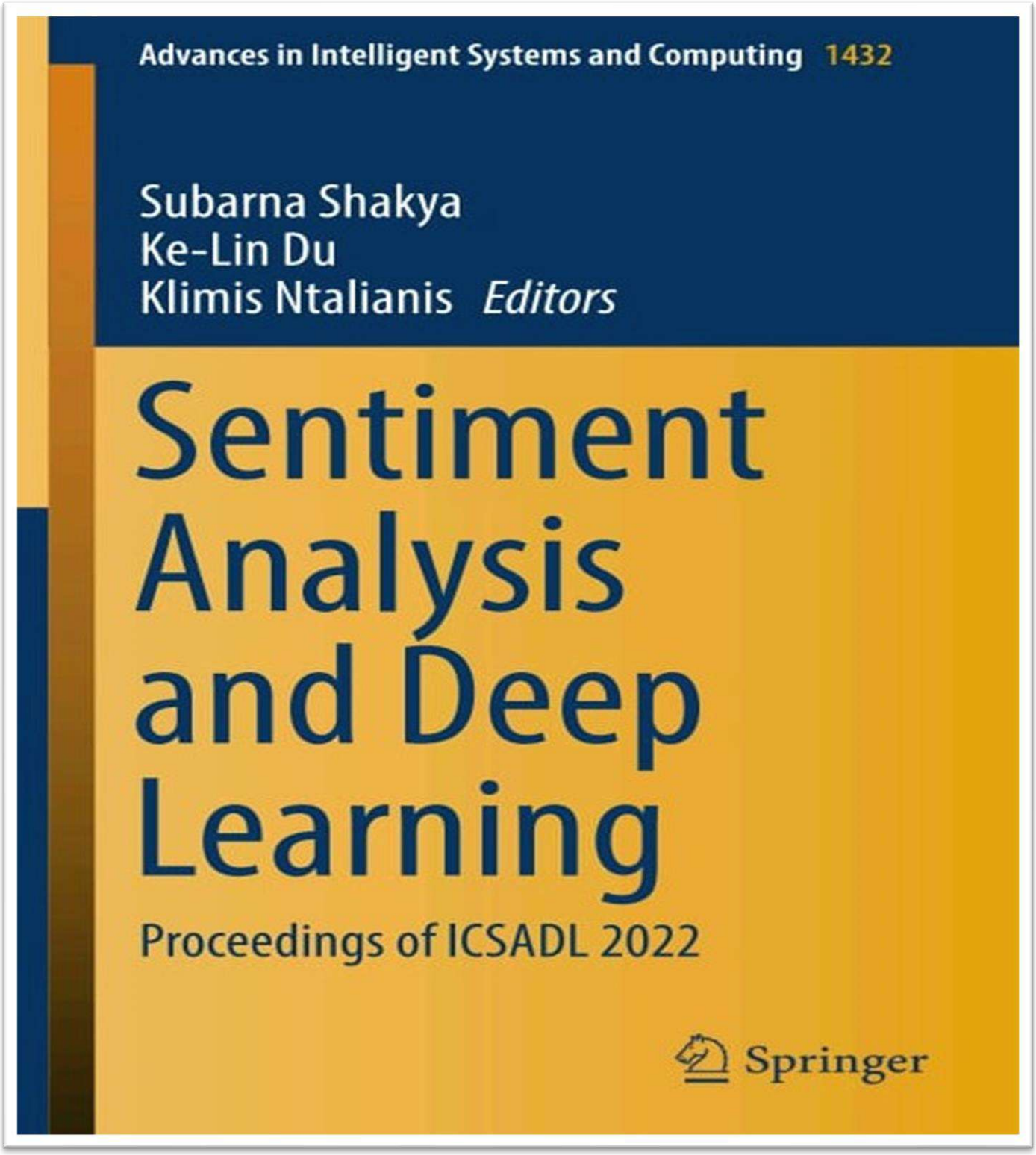
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27. R. FelistaSugirthaLizy - Performance of RSA Algorithm Using Game Theory for Aadhaar Card

Performance of RSA Algorithm Using Game Theory for Aadhaar Card

R. Felista Sugirtha Lizy and V. Joseph Raj

Abstract Data security is ensured by the use of cryptography. Data security refers to the protection of data and privacy to prevent hackers from gaining unauthorized access to applications, computers, and data servers. Cryptography is a process of encrypting data and storing it in databases in a manner that anyone who gains access to it by accident is rendered useless. To encrypt and decrypt data, the RSA algorithm, the ECC algorithm, and other encryption methods are routinely employed. Game Theory—Rivest–Shamir–Adleman (GT-RSA) is a new hybrid algorithm that combines Game Theory and RSA to improve the efficiency of the RSA algorithm by altering the function. By improving the speed, throughput, avalanche effect, and power consumption performance of the GT-RSA algorithm, it is proposed. The performance of the GT-RSA algorithm has been enhanced, and experimental results have been shown.

Keywords Cryptography · Game theory · Mixed strategy · RSA · Throughput

1 Introduction

Cryptography encrypts data and communications so that only those with access to it may read and process it. The approaches of cryptography are based on mathematical principles and algorithms, which are a a collection of calculations based on rules that modify communications in such a way that they are difficult to decipher. Data privacy, Internet browsing, and secret transactions such as credit and debit card transactions are all protected by these algorithms [1]. They are employed in the creation of cryptographic keys, digital signatures, and verification.

Every resident Indian has an Aadhaar number, a 12-digit unique identification that comprises all of a person's information, including demographic and biometric data. Aadhaar is a significant amount of data that must be properly stored and maintained.

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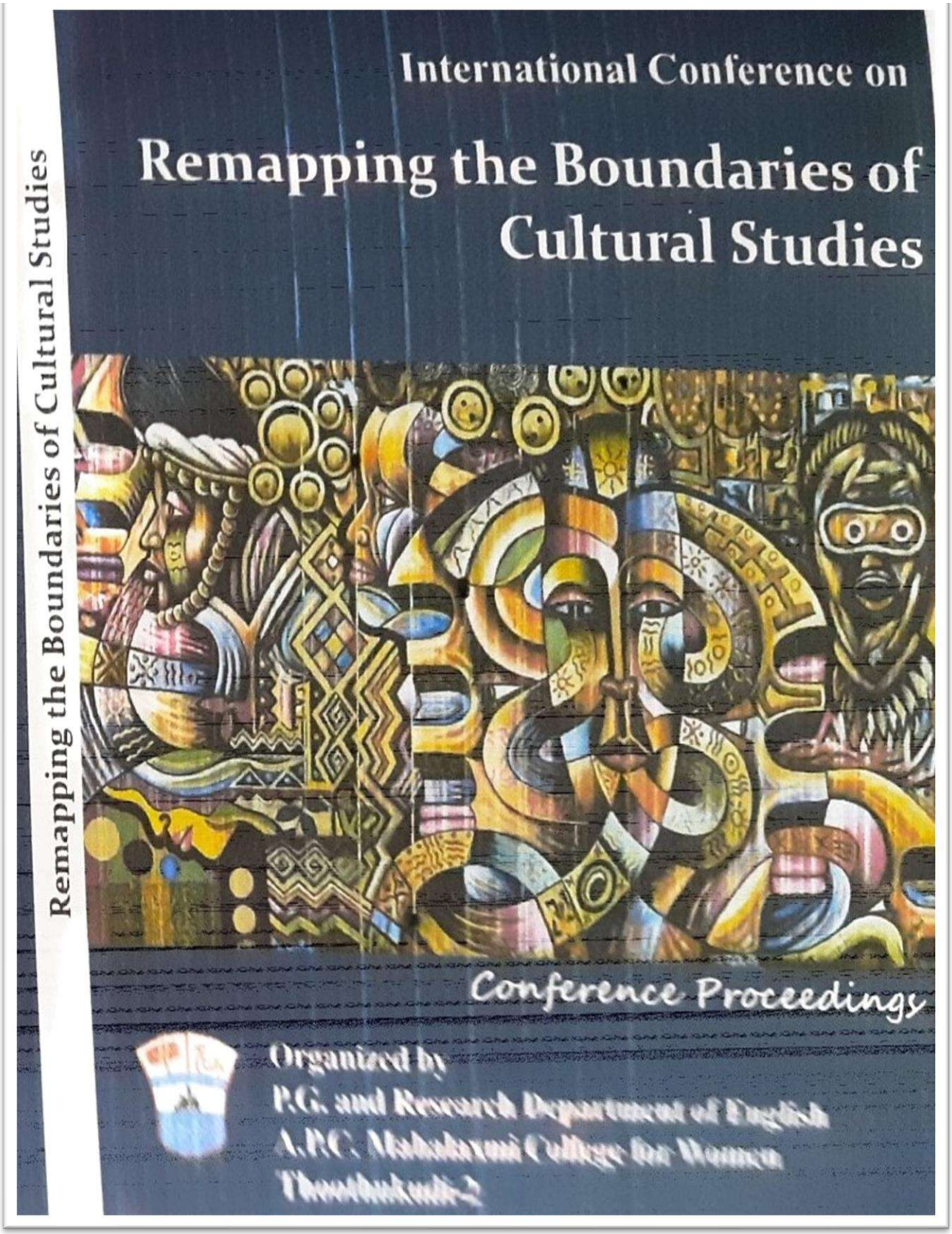
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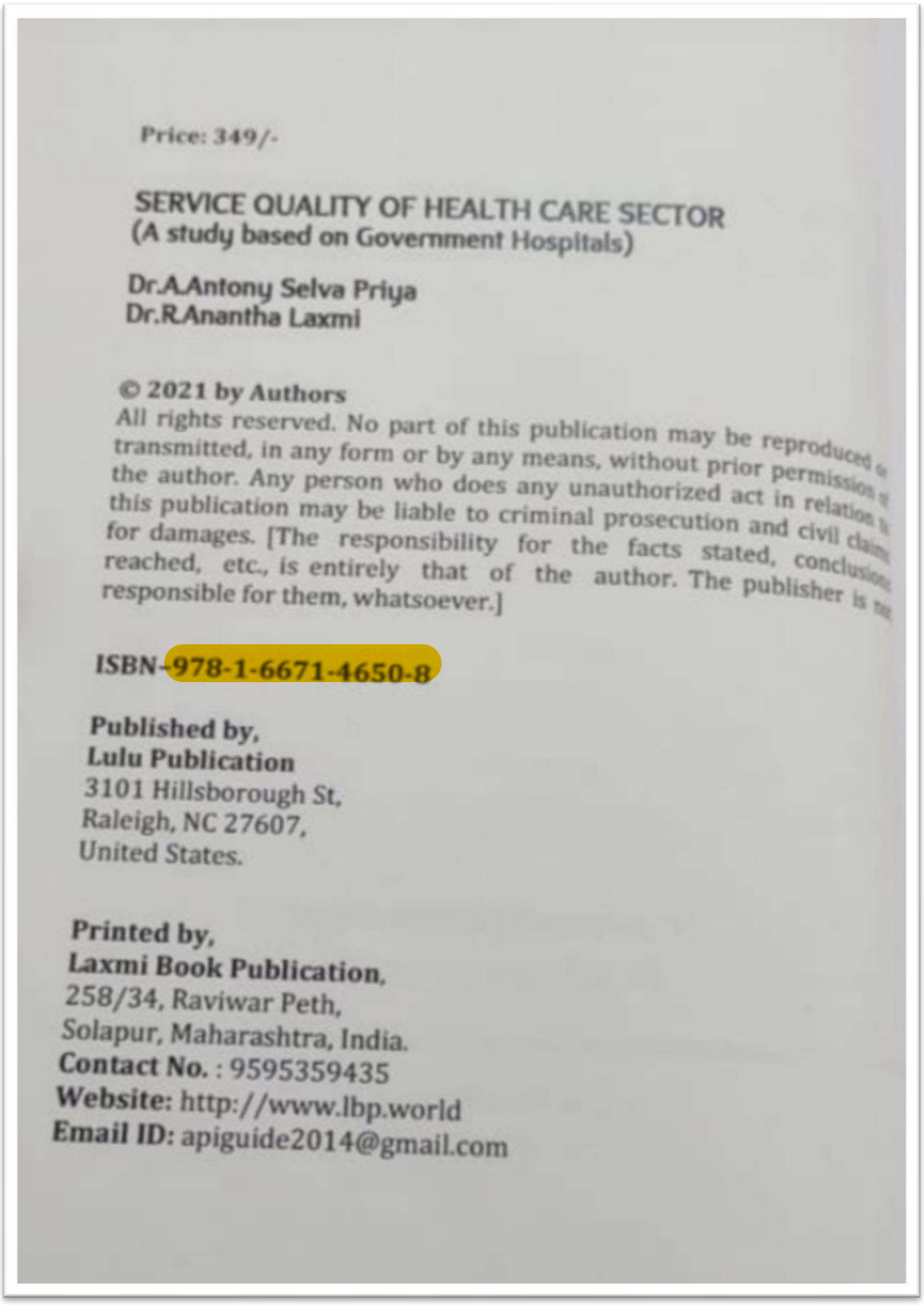

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28. Dr.J.VasanthaSena - Indigenous Ecosystem: Cultural and Ancestral Knowledge in Alexis Wright's The Swan Book

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Indigenous Ecosystem: Culture and Ancestral Knowledge in Alexis Wright's *The Swan Book*

Ms. R. Priyadarshini [1] & Dr. J. Vasantha Sena [2]
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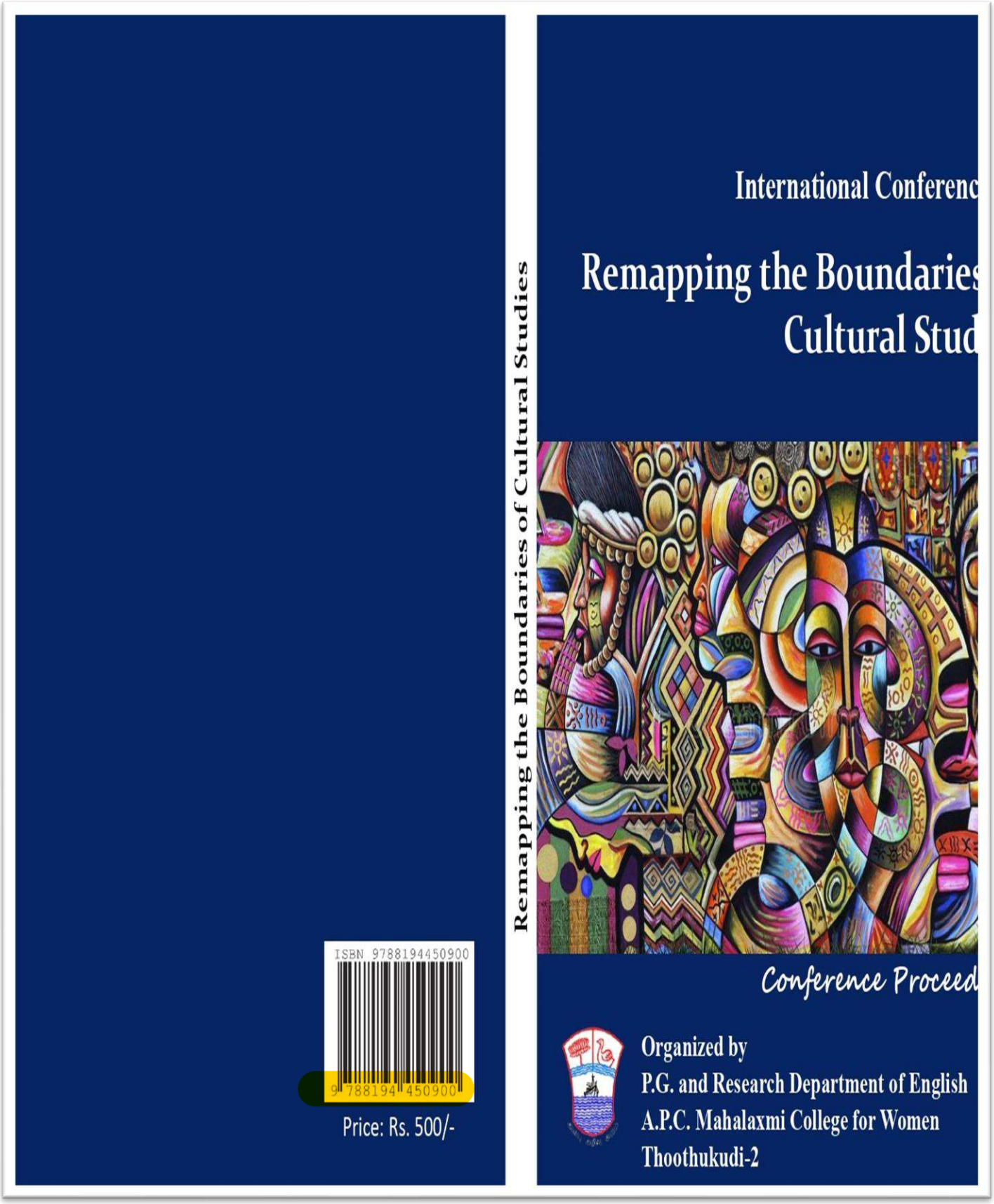
Abstract

This abstract endeavors to articulate the importance of the relationship between the human and the non-human world, tracing the culture and the ancestral knowledge of the indigenous people of Australia. Alexis Wright's literary works have always been embedded with the themes of land rights, spiritual traditions, indigenous identity, culture, ancestry, magical realism and myths. Her novel, *The Swan Book* presents a dystopian future Australia after about one hundred years from the present as the result of the climate change. The novel depicts an aboriginal girl named, Oblivia trying to reconnect with her culture after her eventful homecoming with the swans after living in the country irrevocably altered by the climate change.

Keywords: Indigenous ecosystem, culture, ancestral knowledge, spirits and Alexis Wright.

The present research study focuses on the themes of indigenous identity, culture and the native people's relationship with their traditional land. The research article traces the causes and effects of the climate change trying to dissect the reasons behind the collapse of the ecosystem and how both the human and the non-human world are left stranded in a camp near a swamp. It further analyses the relevance of the ancestral knowledge of the indigenous people in finding their freedom from the aftermath of the damage caused by the imperial settler colonial culture. The study elucidates how indigenous people are determined to purge their alienation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Content

29. Ms.ArchanaRajan - Retracing Aboriginal Identity in Kim Scott's Benang: From the Heart

Remapping the Boundaries of Cultural Studies

Retracing Aboriginal Identity in Kim Scott's *Benang: From the Heart*

Ms. Archana Rajan [1] & Dr. G. Sharmely [2]
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Abstract:

The Aboriginal Protection act gave extensive power to the government over the life of the Aboriginal people as a part of the assimilation policy. Many Aboriginal people were segregated from their families and culture. Kim Scott's *Benang: From the Heart* portrays the consequences of the assimilation policy from the perspective of the Aboriginals and the whites without any biased representation of the history.

This paper traces how an Aboriginal brought up in a white society tries to embrace his Aboriginal culture when he discovers his identity and also how the social and political pressure suppresses an Aboriginal to conceal their identity in order to survive in their own land.

Keywords: Aboriginal, Identity, Assimilation, Half-Caste, History, Retrieve.

Kim Scott's *Benang: From the Heart* represents the history of Aboriginals from different individuals' narratives. Kim Scott as an Aboriginal Australian belonging to the Noongar community depicts the dislocation and disconnection of his people from their land. He discusses the history of the Aboriginal people with evident official documents, newspaper articles, reports, and letters.

The protagonist of the novel, Harley tries to trace back his family history through documents and photographs. He comes across a few photographs of Aboriginal families during his research about his history and finds how Aboriginal families have been

30. Mrs. S. Missba - Analysing the Appeals of effia and Esi in YaaGyasi'sHomegoing

Remapping the Boundaries of Cultural Studies

Analysing the Appeals of Effia and Esi in Yaa Gyasi's *Homegoing*

Mrs. S. Missba

Assistant Professor, PG & Research Department of English

A.P.C. Mahalaxmi College for Women, Thoothukudi – 2

Affiliated to Manonmaniam Sundaranar University, Tirunelveli-12.

'Effia' and 'Esi', is going to say about their own personal issues, how they have suffered towards their home place and society. Yaa Gyasi gives her importance to these characters and they were considered as the main protagonist in the novel "*Homegoing*". It gives us the clear view of the people how they lived and how they handled their tough situation towards slavery and racism. African peoples suffer a lot to live their life peacefully. Especially women's have faced many problems from them, they are considered as a prostitute or giving birth for a child to make their child as a slave for English people, all the Afro-American novels traces the issues in many points of view, for example Feminism, Post-colonial theory, Racism and immigration. It traces the information of the social and economic conditions of the particular people. As well as Gyasi says about the importance of Cultural and the Relationship between Parent and Children, friends and social behaviour of the characters.

Yaa Gyasi was born in Mampong, Ghana. Her father is Kwaku Gyasi French Professor at University of Alabama in Huntsville, and her mother's name is Sophia, and she is a nurse. Due to her father comfort zone they move on to United States in 1991, because he was going to complete his Ph.D. at Ohio State University. They also lived in Illinois and Tennessee, from the age of 10 she raised in Huntsville. She graduated from Stantford and her discipline is English.

She recalls her as a shy child and her childhood memories says about the stories of her brothers who shared their experience as young immigrant children in Alabama. She chooses books as her

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31. Mrs. A .Agnes Mary - A Diasporic Outlook of Chimmanda's Americanah

A DIASPORIC OUTLOOK OF CHIMMANDA'S *AMERICANAH*

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ostract:

Americanah is a famous diasporic novel written by Nigerian-American author imamanda Ngozi Adichie.This paper attempts to exonerate the instances which caused turmoil of identity in the character of Ifemelu, after she migrated from Nigeria to nerica, and leads her to a sense of guilt and an inferiority complex. She faced a lot of ils and challenges to cope with her historical identity and construct a new identity to fit the American Society.

Adichie shows the struggle of Ifemelu with the stereotypes and discourses of race America. This novel explores the themes of Racism, Migration, and Diaspora. Diaspora transcontinental community whose members emigrated or were dispersed from their ginal homeland but remain oriented to it and preserve a group identity. This paper uses on the study of the diaspora from the viewpoint of the protagonist named, Ifemelu. thermore, this paper will examine the immigrant experiences of the protagonist Ifemelu l the discrimination she faced as a Black woman in the novel *Americanah*.

y Words: Cultural identity, migration, racial politics, black literature, diaspora.

ChimamandaNgozi Adichie is a novelist and storyteller, best known for her themes olitics, culture, race, and gender. Her novels, short stories, and plays have received h civil and critical acclaim. Adiche focused on the theory of diasporic culture in this el Americanah.

Adichie apparently illustrates about the American Tribalism,which means erstanding America for the Non-American Black in the novel *Americanah*.

In America, tribalism is alive and well.There are four kinds – class, ideology, region, race. First, class. Pretty easy. Rich folk and poor folk. Second, ideology. Liberals and servatives. They don't merely disagree on political issues, each side believes that the er is evil. Inter-marriage is discouraged and on the rare occasions that it happens, is sidered remarkable. Third, region are The North and the South. The two sides fought

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32. Ms.K.S.Anushya - Exposition of Struggles of a Migrant in Anuradha Roy's Sleeping on Jupiter

TRANSNATIONALISM AND MULTICULTURALISM: GLOBAL LITERARY REFLECTIONS

EXPOSITION OF STRUGGLES OF A MIGRANT IN ANURADHA ROY'S *SLEEPING ON JUPITER*

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Abstract

Migration and Migrant Literature can take a different approach in facilitating cultural understanding.Through the migrant experience the processes of integration and identity development continue to play a primary role in literature. The novel *Sleeping on Jupiter* is writtenby Anuradha Roy. It is her third novel. It was longlisted for the 2015 Man Booker prize. The novel deals with the protagonist Nomi Fredrickson who struggles by her bitterest experience that she faced in the orphanage. *Sleeping on Jupiter* narrates the abuses which the protagonist undergoes in the ashram under the Guruji and how she voices out and overcomes the abuses. This paper tries to highlight the struggles and violences attributed to life ofmigrants as seen in the novel *Sleeping on Jupiter*.

Keywords: Migration, Migrant Literature, Struggle, Violence

The title of the novel *Sleeping on Jupiter* itself is somewhat expecting and dreaming for the better world. It is a story about the backdrop of war, child abuse and the happenings within the four walls of orphanage. It is about the character Nomi Fredrickson who is captivated by her bitterest experience that she faced in the orphanage. The name 'Nomi' sounds like 'It's Not Me' resembling her recollection of past some sort of bad dream which she likes to convert into optimistic life. *Sleeping on Jupiter* may be the dream for many,which some may have achieved by landing on it. Nomi lands on her dream land by tackling all her difficulties which has come in the form of Guruji. Deliberately she focuses on the bad behaviour of Guruji and how she struggled in the presence of Guruji. As a child she is ignorant of what is happening to her both physically and mentally. Being an orphan and a migrant she ignores all sorts of sex tortures made by Guruji and hesitates to betray him for she is penniless and the Guruji is a very important person in the society.

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About the College:

Sri Sarada College for Women, Tirunelveli was established in 1986 by Srimath Swami Chidhbhavananda Maharaj the great saint, seer and savant widely known for the power and depth of his spirituality, with the noble purpose of providing opportunities of higher education to the rural women of the southern districts of Tamil Nadu. Swamiji Maharaj's great vision was that "The girls who enter the portals of this Temple of Learning should leave as NIRAI NANGAIYAR (Perfect Women)". Having been accredited with 'A' Grade by NAAC the college organizes many conferences in various disciplines and publishes an annual multi- disciplinary journal(ISSN2249-601) PRAGNAVANI. This educational citadel of learning initially with 3 UG courses has developed into a college of 11 UG courses, 7 PG courses and 5 M.Phil courses and 2 Research Departments. Character building, culture inculcation and imparting the finest to the discrete in terms of amenities are the basis upon which the super structure of modern education is raised in our college. Discipline, Devotion, Erudition, Affability, Responsibility, Perfection etc., are the laudable aims which are embedded in the spirit of each and every child of Holy Mother Sri Sarada Devi.

About the College:

Rani Anna Government College for Women, Tirunelveli established in 1970 and accredited with 'A' grade by NAAC has consistently worked towards the academic excellence and orotund development of women students from the rural locale of the southern districts of Tamil Nadu. The college has 15 Undergraduate and 13 Postgraduate and 4 M.Phil. courses and 10 Research Departments. The numerous university ranks, sports honors and varied achievements of our students testify to its prodigious growth of the college and to the committed and dedicated service of the Principal and faculty of the college.

About the Department :

The Department of English eternally blooming since 1986, aims to upgrade the neophytes with the mission of making the amorphous mind of the novices as robust. The Literary Blooms, our English Forum, conducts various competitions to surface the latent talents and innate skills of the students. The Department is equipped with accomplished faculty who work fervently for the development of the students towards entirety creating a conducive atmosphere.

About the Department :

The PG & Research Department of English is a burgeoning academic community of dedicated faculty committed to the cause of providing holistic teaching/ learning practices that promote individual language competencies of students that is relatable with the emerging global space. The department conducts various literary activities like Bridge course, soft skill training, RACLIT- Intra Collegiate & Inter- Collegiate Literary Competitions aimed to enhancing the language proficiency of the learners. The Research Forum of the department fosters qualitative and quantitative research aptitude among teachers- scholars a like and the TANSCHE Student's Mini Projects undertaken by our MA students affirm it.

ABOUT THE CONFERENCE :

The concepts "Multiculturalism" and "Transnationalism" refer to different manifestations and the growing acknowledgment of cultural diversity as one of the constituent features of societies in a globalized world. "Multiculturalism" refers to a philosophy or social thinking reactive to cultural uniformity or assimilation and to a model of public policy in which the state plays an active part in the defence of minority rights and cultural diversity. The term "transnationalism" points out the existence of a continuum of stable personal relationships among migrants across borders that affect simultaneously a wide range of phenomena in more than one single country. Both these concepts can be terms of identity and belonging, cultural expressions, family and other social ties, visits, financial flows, organising working life in more than one nation-state or transnational political projects. Considering the assumption of the continuing importance of both transnationalism and multiculturalism, this conference aims at discussing the two notions and exploring their relations. Even though both concepts present popular keywords in academic literature, they are rarely assessed and researched together. Therefore, the conference is an attempt to sketch out possible path for further research involving intersections between transnationalism and multiculturalism.

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PG and Research Department of Geology
V.O.Chidambaram College
Tuticorin-628008. Tamil Nadu. India.

COMPUTATIONAL ENVIRONMENTAL EARTH SCIENCE

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Save Trees Save Fuel Save Life

33. Dr. C. Stella Packiam - Efficacy of Ascidia sydneiensis mediated Iron oxide nanoparticles in dye degradation

Conference proceeding
International Seminar on "Computational Environmental Earth Science" (CEES 2020)

EFFICACY OF ASCIDIA SYDNEIENSIS MEDIATED IRON OXIDE NANOPARTICLES IN DYE DEGRADATION

C. Stella Packiam[a*], H. Kohila Subathra Christy[a], M. Paripooranaselvi[b], A. Dhivya[c], L. Rachel Angeline[c]

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Abstract

In this work, a hermitical tunicate Ascidia sydneiensis were collected and processed for the preparation of iron oxide nanoparticles. The clean-powdered biological marine source provides a better exchange to chemical synthesis. Herein, bio-based iron oxide nanoparticles with reduced and capped marine ascidian extract were characterized by powder x-ray diffraction, Fourier transform infrared spectroscopy, UV–visible spectroscopy, Scanning Electron microscopy with EDAX, and Atomic Force Microscope to investigate its structural, optical, and morphological properties. The voltammogram of nanoparticles exhibit cathodic peak around the potential (-0.10) to express its credible catalytic applications. The decoloration efficacy of methylene blue (MB) dye was carried out with biosynthesized iron oxide nanoparticles. The photocatalytic action was determined by accenting the catalyst dosage, initial dye concentration and pH. The 0.005 g dosed iron oxide nanoparticles react well at pH 9 in 2h to enhance the decolorization of MB upon 90.6%. Thus, the deteriorated surface water in the water bodies with industrial dye molecules can be cleansed by bio-originated iron oxide nanoparticles.

Keywords: *Bio mediation, Ascidia sydneiensis, nano formulation, photocatalyst, methylene blue*

Introduction

Modern dyes are hazardous heterocyclic compound used for colouring the textile, fibres, yarns, fabrics which enters our life cycle through water generates pollution in it. Water pollution through dye molecules cause serious environmental problems subsequently affords high toxicity and accumulation in the environment. Moreover, toxicities of dyes like teratogenicity in frog embryos, enzymic degradation metabolites toxicity, genotoxicity, carcinogenicity, and phytotoxicity have been reported[1,2,3]. Purification methods like biological methods, filtration,

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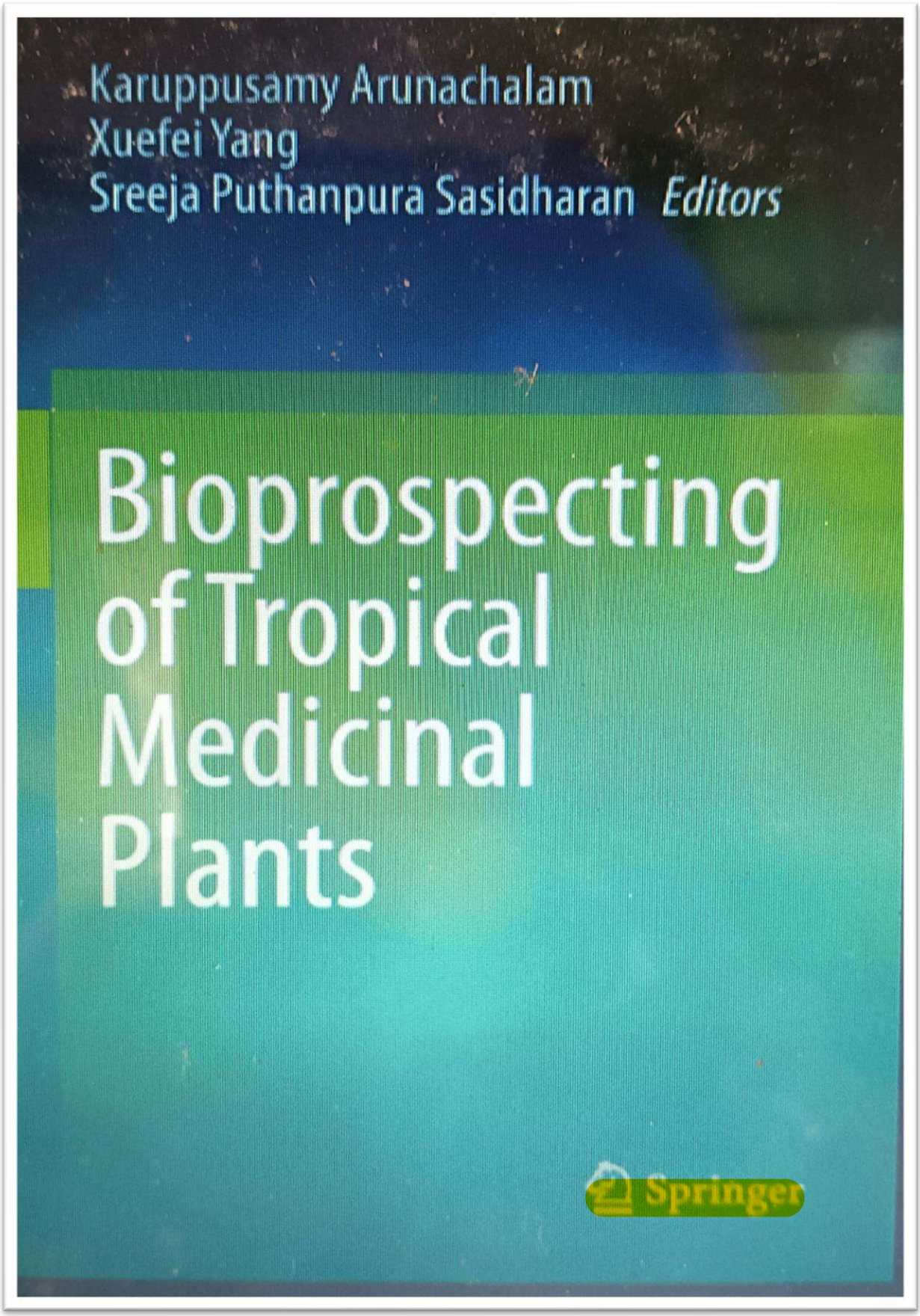
Karuppusamy Arunachalam
Xuefei Yang
Sreeja Puthanpura Sasidharan Editors
Bioprospecting of Tropical Medicinal Plants
Springer

34. V. Sornalakshmi – An Ethnobotanical Study of Medicinal Plants Used by Traditional Healers in Grizzled Squirrel Wildlife Sanctuary (GSWS) Tamil Nadu, India

Plants Used by Traditional Healers in Grizzled Squirrel Wildlife Sanctuary (GSWS) Tamil Nadu, India

Pious Soris Tresina, Murugeswaran Santhiya Selvam, Vallinayagam Sornalakshmi, and Veerabahu Ramasamy Mohan

Abbreviations

FC	Frequent citation
Fic	Informant consensus factor
FL	Fidelity level
GSWS	Grizzled squirrel wildlife sanctuary
RFC	Relative frequency of citation
UV	Use value

1 Introduction

Ethnobotany is the relationship and dealing between people and plants with respect to their cultural values. Interactions and relationship between people and plants are different from place to place because of their relative importance, uses and different social, ethnic and cultural factors. Cultural values of plant exploration play a key role in pharmaceutical and nutritional industrial sectors [1]. Ethnobotanists are growingly focusing on the function of diverse quantitative and statistical techniques to understand and gather knowledge on precious plants in induced communities [2]. Ethnobotany and ethnopharmacological knowledge is considered to be an integral part of the knowledge required for drug development. Traditional medicine is to be

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35.Dr. V. Jeyanthikumari - A Detailed revision of Microbial Biosurfactant

Proceedings of Virtual International Conference on Multidisciplinary Research-2022

[VICMR-2022]

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A DETAILED REVISION OF MICROBIAL BIOSURFACTANTS

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Abstract

Microorganisms produce biosurfactants, which are surface-active chemicals. They are non-toxic, biodegradable, and environmentally friendly. Various microbial surfactants have been updated in this review. Fermentation conditions, environmental variables, and nutrient availability all influence the formation of biosurfactants. Biosurfactants extracted from the cell-free supernatant using solvent extraction and their qualitative and quantitative analysis have been described with relevant equipment information. The biosurfactant's applications include biomedical, cosmetic, and bioremediation applications. Trace elements such as rhamnolipids, sophorolipolipids, trehalose lipids, rhamnoglycolipids, cellobiol lipids, polyglycerol, diglycosyl diglycerides, fatty acids and polyol lipids are examples of biosurfactants found in microorganisms. In the bioremediation of gasoline spilt soil and petroleum oily sludge, rhamnolipid biosurfactants generated by Pseudomonas aeruginosa DS10-129 proved to be an important bioremediation tool. By freeing the weathered oil from soil matrix and increasing the bioavailability of hydrocarbons for microbial breakdown, rhamnolipid biosurfactant improved the bioremediation process. Hydrocarbon-contaminated locations might benefit from its use in the cleanup process. For oil-contaminated ocean habitats, biosurfactants from marine microorganisms have considerable promise. rhamnolipids; fermentation; emulsification; bioremediation; as well as qualitative and quantitative evaluation.

Keywords: Microbial Biosurfactants surface-active chemicals. Fermentation, environmental variables,

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36. Dr.V.Jeyanthi kumari - Study on the growth performance of spirulina on poultry droppings spent slurry of biogas plant

Proceedings of the Two Day National Seminar on Anthropological Research: A Multidimensional Approach

STUDY ON THE GROWTH PERFORMANCE OF SPIRULINA ON POULTRY DROPPINGS SPENT SLURRY OF BIOGAS PLANT.

V. JEYANTHI KUMARI
Assistant Professor of Zoology,
A.P.C.mahalaxmi College for Women,
Thoothukudi.

Abstract

In the present study, Spirulina was cultivated in the alkaline, medium which contains spent poultry droppings slurry from a biogas plant as supplement substrates with control treatments. Different parameters which included the growth rate, protein content, chlorophyll estimation, and dry weight also analysed after 15 days of growth. The results revealed that, the cultivation of Spirulina by providing supplementary substrate gave better results when compared to the control.

INTRODUCTION

Photosynthetic microorganisms are one of the most promising sources of energy as they are renewable and CO2 neutral. (Salunke et al., 2016; Cuaresma et al., 2011; Geider et al., 2004). The human race is now forced to live in polluted areas and that live in such polluted places is now in the grip of deadly diseases. We are compelled to protect ourselves from such diseases by following natural methods. One of the most important donations is the Spirulina, the blue-green algae. It is symbiotic, multicellular, and filamentous blue-green microalgae, with symbiotic bacteria that fix nitrogen from the air (Orio Ciferri and Orsola Tinoni,1985).

It is highly protein-rich, and capable of protecting human society from various pollution effects and various deadly diseases. Spirulina contains unusually high amounts of protein, between 55 and 70 percent by dry weight, depending upon the source (Phang et al.,2000). The essential lipids (unsaturated fatty acids) in Spirulina are about 1.3-15 percent of total lipid (6-6.5 percent), mainly constituting y-linolenic acid (30-35 percent of total lipid) (Borowitzka, 1994; Li and Qi,1997).

Spirulina has antioxidant and inflammation-fighting properties, as well as the ability to help regulate the immune system (Maddalyravi et al., 2010). It has been considered as "'Food of the future" and ideal food for astronauts by NASA (Oliguín,1986).

The dried cells of microorganisms such as bacteria, fungi, yeasts, and algae that are grown in large-scale culture systems as proteins, for human or animal consumption are collectively known as single cell proteins (Coles and Jones, 2000; Montagnes and Franklin, 2001). The mass cultivation of Spirulina depends on several factors, including the availability of

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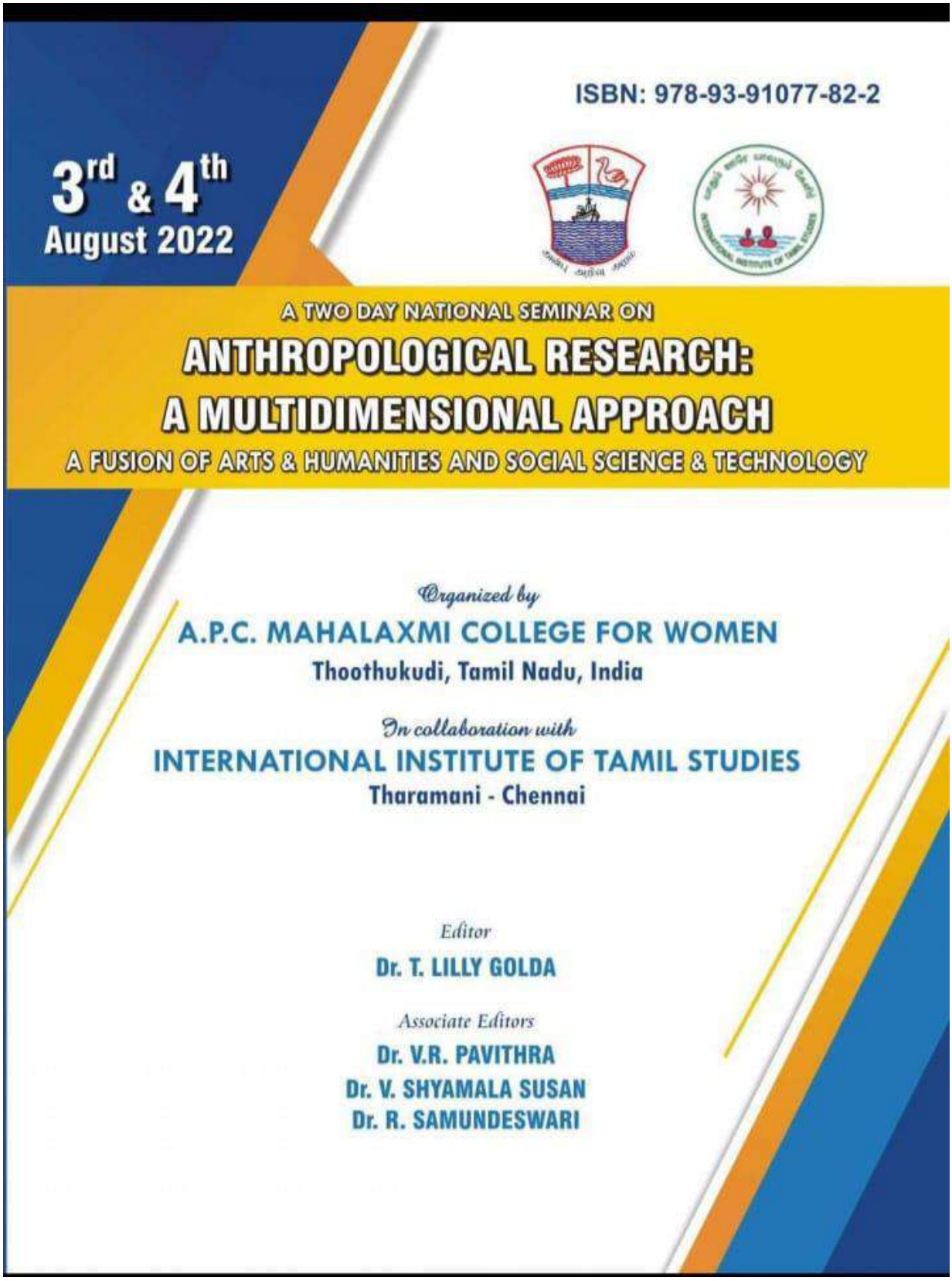
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37.Dr.V.Jeyanthi kumari – Impact of rock phosphste amended biogas slurry and phosphate Solubilizing organisms on chilly plant growth

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ARTICLE-31

IMPACT OF ROCK PHOSPHATE AMENDED BIOGAS SLURRY AND PHOSPHATE SOLUBILIZING MICROORGANISMS ON CHILLY PLANT GROWTH

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Abstract

The chilly plants used in this experiment were treated with biologically digested manure from a biogas plant together with Phosphate Solubilizing Microorganisms (PSM) and Rock Phosphate (RP) in four treatments with a control (T0, T1, T2, T3, and T4). For the purpose of identifying phenotypic traits such root length, shoot length, total height, wet weight, dry weight, chlorophyll content, and yield, samples were taken during the seedling, pre-flowering, blooming, and terminal stages of the plant. In comparison to the non-enriched slurry, the slurry

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38. Dr.V.Jeyanthi kumari - Growth performance of *Spirulina platensis* media supplemented with cowdung biodigested slurry of biogas plant

GROWTH PERFORMANCE OF SPIRULINA PLATENSISIN MEDIA SUPPLEMENTED WITH COW DUNG BIODIGESTED SLURRY OF BIOGAS PLANT

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ABSTRACT

The cow dung biodigested slurry from biogas plant afterbio gas production was collected and mixed with Zarrouk's medium in the concentration of 30gms for the period of 35daysfor the cultivationof blue green algae *Spirulina paltensis*. Phycocyanin (crude) and apparent turbidity were used to measure the growth of S.platensis in both laboratory and experimental settings. Other measures were dry weight, crude protein, Direct Microscopic Count (DMC), and biomass concentration. The results revealed that the supplement treatment of 30gbioslurry with Zarrouk's media had higher growth rates (2.49 at 750nm), dry weights (1.31 g/l), protein levels (197µg/mg), and phycocyanin (2.78 at 680nm) levels than the control.

Key words: *Spirulina platensis*, spent biodigested slurry, cow dung, Zarrouk's media, protein content, phycocyanin

INTRODUCTION

A tiny, filamentous cyanobacterium is spirulina. It is marketed as a superfood that helps people feel energized. Polysaccharides and essential fats are crucial nutrients because they are quickly absorbed by human cells and aid in the release of energy (Karkos *et al.*, 2011). The current environmental pollution and its effects on mental and physical health, dietary changes, and other risk factors have all raised the mortality rate and the prevalence of civilization-wide disorders (Usharani *et al.*, 2012).

CONTENT

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39. **Dr.V.Jeyanthi kumari** - Impact of Phosphate Solubilizing microorganisms and Rhizobium phaseolus on Phaseolus vulgaris amended with rock

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Impact of phosphate solubilizing microorganisms and *Rhizobium phaseolus* on *Phaseolus vulgaris* amended with rock phosphate and biogas spent slurry.

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Abstract: Phaseolus vulgaries seeds were inoculated with Rhizobium phaseolus, Phosphate solubilizing Microorganisms (PSO) along with rock phosphate in mud pots which contain spent slurry of biogas plant and soil. This experiment was carried out in 4 treatments with control (T1, T2, T3, T4 and T0).The samples were collected at seedling, preflowering, blooming and end stages to learn the phenotypical nature includes, the length of root, stretch of shoot, prime apex, and both wetted and dried weight, number of nodules, nutrient content and biochemical constituents which included NPK and chlorophyll contents. The plant which was supplied by R.phaseous, PSO with rock phosphate has recorded the highest parameters in the above said morphological characters and biochemical constituents compared to control and other application mixtures. The NPK content were also increased from seedling stage (1.262%, 0.28% & 0.26%) to flowering stage and declined in the final stage of its growth due to the utilization of these elements for the yield of the product. Soil analysis of microbial survey during seed stage revealed that, the control field contained very low THBP of $19x10^6 \pm 0.160$ cfu/gm. The high amount of THBP, THFP and TPSMP were seen in the R. phaseolus + PSO + RP in the order ($100x10^6 \pm 0.264$cfu/gm), ($80x10^3 \pm 0.637$cfu/gm) and ($158x10^5 \pm 0.390$cfu/gm) respectively. The minimum load observed in control ($20x10^1 \pm 0.415$cfu/ml).This field report emphasized that PSO and R.phaseolus along with rock phosphate combination played vital role on nodulation, nitrogen fixation and nutrient uptake in P.vulgaries.

Key Words : R.phaseous, Phosphate solubilizing Microorganisms (PSO), rock phosphate, spent slurry.

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40. K. Aruna Sakthi, R. Rajeswari - Degree – Distance Resolving sets of some algebraic graphs

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DEGREE-DISTANCE RESOLVING SETS OF SOME ALGEBRAIC GRAPHS.

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Abstract: The concept of resolving set was first introduced by Slater, Harary and Melter. After that various resolving set has been introduced and studied for various graphs by many Mathematicians. In this paper we introduce degree distance resolving sets and investigated for some algebraic graphs and discussed as a theorem in detail.

Keywords: Resolving set, Degree distance resolving sets.
AMS Subject Classification: 05C12, 05C50, 05C78

1 Introduction

Order Prime graph was introduced by M.Sattanathan and R.Kala. Identity graphs was studied by Kandasamy, W.B.V and F. Smarandache. Resolving sets was first studied by Slater and Harary and Melter. In Network discovery and verification, chemistry and robot navigation are some of the application in resolving sets. Inspiring rational resolving sets degree-distance resolving sets has been introduced and studied for the identity graphs and order prime graphs of finite groups.

2. Preliminaries

Definition: 2.1 Resolving sets

A set of vertices S in a graph G is called a resolving set for G if, for any two vertices u, v there exists $x \in S$ such that the distances $d(u,x) \neq d(v,x)$.The minimum cardinality of a resolving set of G is called the dimension of G and is denoted $dim(G)$.

Definition: 2.2 Identity graphs

Let $\mathcal{G}$ be a group. The identity graph $G = (V,E)$ with vertices as the elements of group and two elements $x, y \in \mathcal{G}$ are adjacent or can be joined by an edge if $x.y = e$, where e is the identity element of $\mathcal{G}$ and identity element is adjacent to every other vertices in G.

Definition: 2.3 Order Prime graphs

Let Γ be a finite group.The order prime graph(Γ)of a group Γ is a graph with V((Γ))=Γ and two vertices are adjacent in (Γ) if and only if their orders are relatively prime in Γ.

3. Degree Distance resolving sets for some identity graphs of finite groups

Definition: Degree Distance resolving sets

Let graph $G = (V,E)$. For u $\in V$ associate a vector with respect to a subset $S = \{s_1, s_2, \dots, s_k\}$ of V by $\Gamma(u/S)$={d(u,s_1), d(u,s_2),...,d(u,s_k)} where $d(u,v)$ is defined by $d(u,v) = d(u,v) + \deg(v)$, where $d(v)$ is the degree of the vertex v. Then the subset S is said to be degree distance resolving sets if $\Gamma(u/S) \neq \Gamma(v/S)$ for all $u, v \in V - S$.The minimum cardinality is called as degree distance metric dimension and it is denoted by $d - dd(G)$.

Theorem: 3.1 Degree distance dimension for the identity graph of Z_n, $n > 3$ is $\frac{n-1}{2}$.

Proof: Let graph $G = (Z_n, \oplus_n)$ for n>3 odd number. The vertex set of G is $V(G) = \{0,1,2,\dots n-1\} = \left\{x_0, x_1, x_2, \dots, x_{\frac{n-1}{2}}, x_{\frac{n+1}{2}}, \dots, x_{n-1}\right\}$. The edge set of G is $E(G) = \{x_0x_i, x_1x_{n-1}, x_2x_{n-2}, \dots, x_{\frac{n-1}{2}}x_{\frac{n+1}{2}}\}$, $1 \leq i \leq n-1$. $|V(G)| = n$; $|E(G)| = \frac{3n-3}{2}$. Let $S \subseteq V(G)$. If $|S| = 1$ i.e subset S can take any one of the vertex x_i, $0 \leq i \leq n-1$. If this subset is consider each vertex has no distinct codes. Therefore S is not a degree distance resolving set.

41. K. Aruna Sakthi, R. Rajeswari - Global Alliance resolving set for identity graph of finite group

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Global Alliance Resolving Set For Identity Graph of Finite Group

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Abstract

This article analyses about global alliance resolving sets on algebraic graphs like identity graphs of finite groups. In first part of this article deals about finding global alliance dimension of identity graph of finite groups. And then it has been compared with some set like pendant set, hop set, total set. And then its dimension has been compared with global alliance dimension which has been elucidated as a theorem.

Keywords: Resolving set, pendant set, hop set, independent set, total set, global alliance resolving set, identity graphs.

AMS Subject Classification: 05C12, 05C50.

1. Introduction and Preliminaries:

Resolving sets was first introduced by Slater [14] and then joined work by Harary and Melter[7]. It is used to locate objects in graphs. Here restriction is made on the number of objects and cannot be more than the number of vertices of the graphs. Many resolving sets like independent, degree equitable, rational resolving sets has been introduced and studied by many mathematician for various graphs [1,4,12,13]. Resolving sets has many real life application in network discovery and verification, in chemistry and also in robot navigation etc[2]. Defensive, offensive and dual alliances were first introduced by Kristiansen, Hedetniemi and Hedetniemi [11], several authors have studied their mathematical properties [3,5,8] as well as the complexity of computing minimum cardinality of alliances [6,9]. The minimum cardinality of a defensive (respectively, offensive or dual) alliance in a graph Γ is called the defensive (respectively, offensive or dual) alliance number of Γ. The mathematical properties of defensive alliances were first studied in [11] where several bounds on the defensive alliance number were given. The particular case of global (strong) defensive alliances was investigated in [8] where several bounds on the global (strong) defensive alliance number were obtained. Identity graph was studied by kandasamy and Samarachande in [10]. Inspiring all these global alliance resolving set was studied for identity graph of finite group and comparison has been done with some basic sets.

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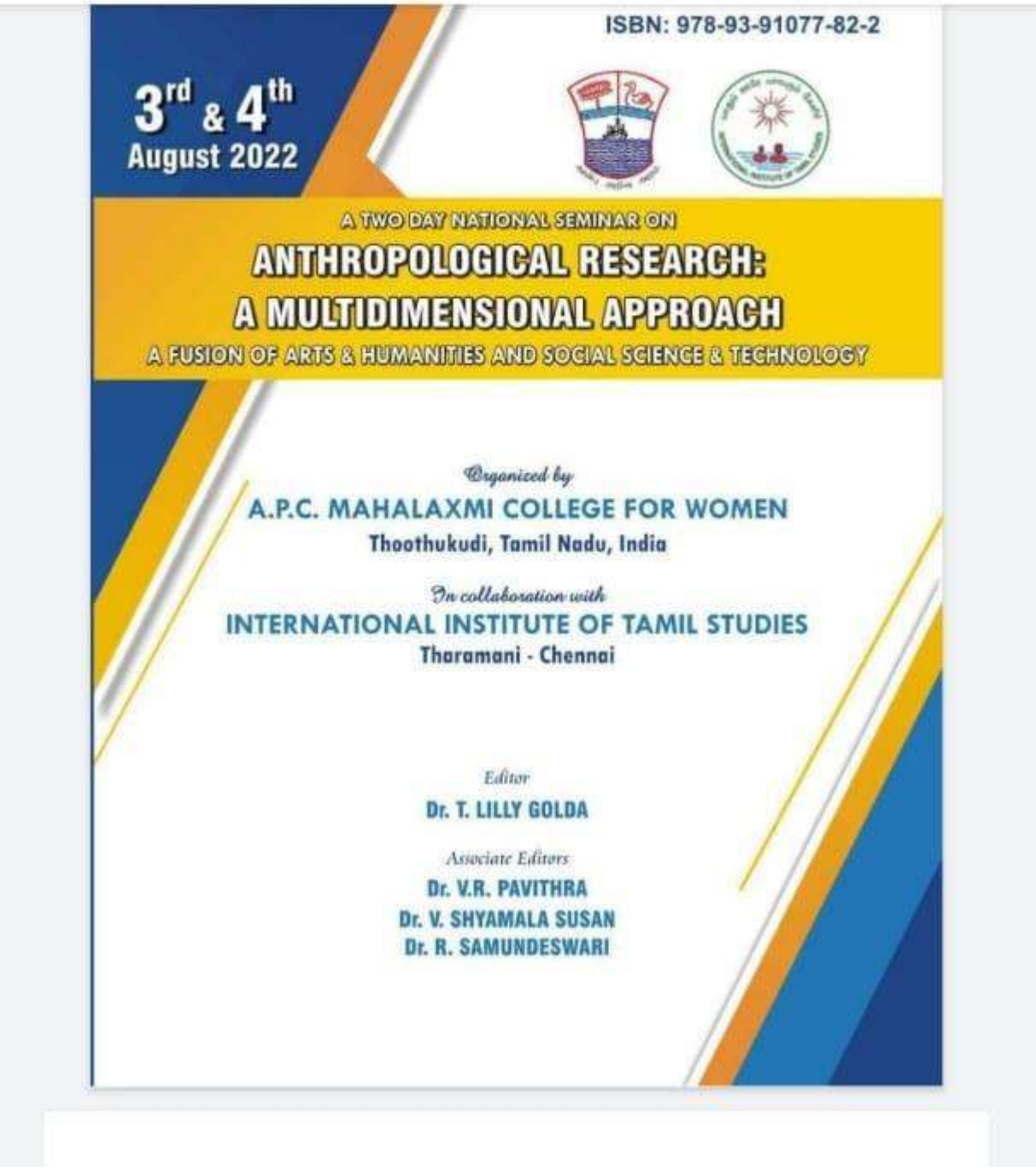
Mrs. P. Gurulakshmi-Vitex negundo mediated synthesis and characterization of iron oxide nano particle



VITEX NEGUNDO MEDIATESD. R. SYNTHESIS AND CHARACTERIZATION OF IRON OXIDE NANOPARTICLE

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Abstract:

Recently Iron Oxide Nano particles have attracted much consideration due to their unique properties such superparamagnetism. Surface to volume ratio, greater surface area and easy separation methodology. The use of plant extract is found to be a fascinating approach for non-toxic and efficient synthesis of iron nanoparticles. The work was conducted with the green synthesis of iron oxide nanoparticles using FeSO4 solution with aqueous extract of Vitex Negundo under atmospheric condition. Iron Oxide nanoparticles is characterized by UV-Visible and XRD spectroscopy. The formation of iron oxide nanoparticles is determined by the color change. Iron Oxide Nanoparticles can be a good source for alternative therapy for human diseases.

Keywords: Iron Oxide Nanoparticles, GreenSynthesis,Vitex Negundo.

INTRODUCTION

Metallic nanoparticles have different physical and chemical properties from bulk metals (e.g., lower melting points, higher specific surface areas, specific optical properties, mechanical strengths, and specific magnetizations), properties that might prove attractive in various industrial applications [1]. Nanotechnology and Nanoscience studies have emerged rapidly during the past years in a broad range of product domains.. Nano technology represents the design, production and application of materials at atomic, molecular and macromolecular scales, in order to produce new nanosized materials. The term nanoparticle is a combined name for both nanospheres and nanocapsules[2].Magnetic NPs are of great curiosity for investigators from an eclectic range of disciplines, which include heterogenous and homogenous catalysis, biomedicine, magnetic fluids, data storage Magnetic Resonance Imaging (MRI), and environmental remediation such as water decontamination. Theliterature revealed that NPs

perform best when the size is <critical value i.e. 10-20 nm[3]. At such a lowscale the magnetic properties of NPs dominate effectively, which make these particles priceless and canbe used in different applications [4],[5],[6]. Iron nanoparticles, nanodots or nanopowder are spherical high surface area metal nanostructures. Average particle size of nanoscale. [7]Vitex negundo seed has recently been proven to be an effective antineoplastic and antioxidant, and has been considered as a botanical insecticide against various insect pest species [8-11]. The leaves extract of vitex negundo also possesses the ability to fight oxidative stress by reducing lipid peroxidation because of the presence of flavones, vitamin C and carotene [12].

In the present work we synthesize Iron Oxide Nanoparticles from Vitex Negundo leaves extract.

MATERIALS AND METHODS

Materials:

All the reagents used in this experiment were obtained from Sigma Aldrich chemicals India. Double distilled water was utilized for all processes. Filtration was done using What man no.1 filter papers. Glass wares used for the reactions were washed well, rinsed with double

P. Gurulakshmi-Catalytic activity of La/Bi/Cu/Cellulose Nanocomposites

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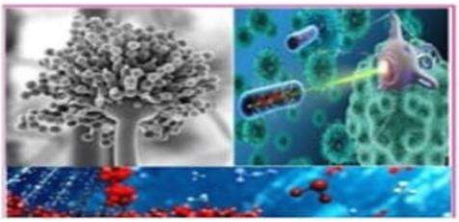

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Catalytic Activity of La/Bi/Cu/Cellulose Nanocomposites

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Abstract

Due to a number of circumstances, hazardous chemicals may be difficult to accomplish. These contaminants have been removed using a variety of approaches.Due to the hazardous substances that seep into water from synthetic materials used for water treatment, there are extra risks.Therefore, research on the creation of superior materials that could attain great efficacyciency without posing any health risks, which encouraged the investigation of non-toxic materials like those composed of metal and cellulose. The selection of the materials and the most effective procedures that enable theirmixture in revorder. In the present study, we report the synthesis ofLa/Bi/Cu /cellulosenanocomposites and their physical properties. La/Bi/Cu trimetalnanoparticles were synthesized by chemical reduction of corresponding metal salts with NaBH4 in the presence of cellulose , whencellulose molecules adsorbonto the surface of as-prepared La/Bi/Cu trimetal nanoparticles forming La/Bi/Cu/Chitosan nanocomposites.Natural chitosan not onlyacts as supporting matrix, but also serves as a stabilizer for the formationofLa/Bi/Cu trimetal nanoparticles.The La/Bi/Cu/cellulosenanocomposite material was found to effectively reduce 4-nitrophenol (4-NP) to 4-aminophenol (4-AP) in the presence of the reducing agent $NaBH_4$.The optical properties, morphologies, structure, chemical compositions and electronic properties of La/Bi/Cu /chitosan compositeswere characterized by XRD,SEM and UV–visible absorption spectroscopy. The SEM images showed variation in morphology of the particles. The XRD pattern revealed the crystalline nature of the nanocomposites.

Keywords: *Trimetal, Cellulose, Anticancer, p-nitro phenol.*

Introduction

The most prevalent polymer in nature, cellulose, is composed of -D-glucopyranose units joined by -1,4-glycosidic linkages [1,2]. Desirable characteristics of this polysaccharide include rigidity, affordability, strength, and good thermal stability [3]. Furthermore, cellulose comes from renewable and sustainable sources, which is better for the environment than

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thermoplastics. Thus, cellulose stands out as a green option for acquiring sustainable materials due to the growing issues associated with the shortage of petroleum and pollution brought on by synthetic polymers. A low-density and low-weight final product is in fact provided by the use of cellulose as a nonabrasive and nontoxic matrix in its composites [3,4]. The creation of blends including cellulose and thermoplastics has received a lot of attention lately and can be useful, particularly for environment.[5] Despite the benefits, there are very few publications on cellulose nanofiber composites for catalytic applications published in the literature. As a result, the current research is concentrated on cellulose nanocomposites for catalytic applications.Industrial wastewater frequently contains nitrophenols, such as 4-