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on 24th and 25th January 2023

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Uzbekistan



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MORE RESULTS ON SUM CONNECTIVITY MATRIX AND ENERGY OF A 2-UNIFORM T_2 HYPERGRAPH

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Abstract

Let H be a 2-uniform T_2 hypergraph of order $n \geq 4$. The Sum connectivity matrix of H , denoted by $SC(H)$ is defined as the square matrix of order n , whose $(i, j)^{th}$ entry is $\frac{1}{\sqrt{d_i + d_j}}$ if x_i and x_j are adjacent and zero for other cases. The sum connectivity energy $SCE(H)$ of H is the sum of the absolute values of the eigenvalues of $SC(H)$. It is shown that, for a 2-uniform T_2 hypergraph $[SCE(H)] \leq \lceil \frac{n}{2} \rceil + 1$.

Keywords : T_2 hypergraph; 2-uniform T_2 hypergraph; sum connectivity matrix; sum connectivity energy.

AMS Subject Classification : 05C65

1 Introduction

The basic definitions and terminologies of a hypergraph are not given here and we refer it [1] and [11]. The concept of hypergraph was introduced by Berge in 1967. In 2017, Seena V and Raji Pilakkat were introduced Hausdorff hypergraph, T_0 hypergraph and T_1 hypergraph. Based on [6] and [7] S.Sujitha and D.Sharmila were introduced T_2 hypergraph and studied adjacency matrix, randic matrix, zagreb matrix and the corresponding energy [10]. In 1977, Gutman [2] defined graph energy. In 2007, Nikiforov [4] extended the concept of graph energy to matrices. In 2010, Bozhou and Nenad Trinajstic were introduced the sum connectivity energy of a graph [5] and later the same was studied by many authors. In this article, we study the sum connectivity matrix and sum connectivity energy of the T_2 hypergraph.

Throughout this article, H is a simple connected 2-uniform T_2 hypergraph with order n and size m , where the order and size are the minimum number of vertices and edges need to define a 2-uniform T_2 hypergraph. The number of edges of a hypergraph H that are incident to a given vertex is called the degree of the vertex [3]. Here the maximum degree is Δ and minimum degree is δ . The following definitions and theorems are used in sequel.

Definition 1.1 [10] A hypergraph $H=(X,D)$ is said to be a T_0 hypergraph if for any two distinct vertices u, v of X there exist hyperedge containing one of them but not the other.

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VERTEX SWITCHING IN 5- PRODUCT CORDIAL GRAPHS

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Abstract

Let f be a map from $V(G)$ to $\{0, 1, \dots, k-1\}$ where k is an integer, $1 \leq k \leq |V(G)|$. For each edge uv assign the label $f(u)f(v)(\text{mod } k)$. f is called a k -product cordial labeling if $|v_f(i) - v_f(j)| \leq 1$, and $|e_f(i) - e_f(j)| \leq 1$, $i, j \in \{0, 1, \dots, k-1\}$, where $v_f(x)$ and $e_f(x)$ denote the number of vertices and edges respectively labeled with x ($x = 0, 1, \dots, k-1$). In this paper we prove that vertex switching of path P_{n+1} and double fan DF_n admit 5-product cordial labeling.

Key words: Cordial labeling, product cordial labeling, k -product cordial labeling, 5-product cordial labeling, vertex switching.

AMS classification: 05C78.

1 Introduction

Graph labeling is one of the important areas in graph theory. The very first paper on graph labeling problems was published in 1967. Since then, many graph labeling techniques have been studied by several authors (see [1]). The concept of k -product cordial labeling was defined in [2] as follows: Let f be a map from $V(G)$ to $\{0, 1, \dots, k-1\}$ where k is an integer, $1 \leq k \leq |V(G)|$. For each edge uv assign the label $f(u)f(v)(\text{mod } k)$. f is called a k -product cordial labeling if $|v_f(i) - v_f(j)| \leq 1$, and $|e_f(i) - e_f(j)| \leq 1$, $i, j \in \{0, 1, \dots, k-1\}$, where $v_f(x)$ and $e_f(x)$ denote the number of vertices and edges respectively labeled with x ($x = 0, 1, \dots, k-1$). Motivated by this concept, we further studied and showed that some families of graphs admit k -product cordial labeling [2, 3, 4, 5, 6, 7, 8, 9]. In this paper, we show that vertex switching of path $P_n + 1$ and double fan DF_n are 5-product cordial graph.

We use the following definitions to prove our results.

Definition 1.1 [10] *The vertex switching G_v of a graph G is the graph obtained by taking a vertex v of G , by removing all the edges incident with v and joining the vertex v to every vertex which is not adjacent to v in G .*

Definition 1.2 [11] *The graph $P_n + 2K_1$ is called a double fan denoted by DF_n .*



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RESULTS ON RELATIVELY PRIME DOMINATION NUMBER OF LADDER GRAPHS

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Abstract

Let G be a non-trivial graph. A set $S \subseteq V$ is said to be a relatively prime dominating set if it is a dominating set with at least two elements and for every pair of vertices u and v in S such that $(\deg u, \deg v) = 1$. The minimum cardinality of a relatively prime dominating set is the called relatively prime domination number and its denoted by $\gamma_{rpd}(G)$. If there is no such pair exist, then $\gamma_{rpd}(G) = 0$. For a finite undirected graph $G(V, E)$ and a subset $\sigma \subseteq V$ the switching of G by σ is defined as the graph $G^\sigma(V, E')$ which is obtained from G by removing all edges between σ and its complement $V - \sigma$ and adding as edges all non-edges between σ and $V - \sigma$. In this paper we compute the relatively prime domination number of vertex switching of ladder graph and its complements.

Key words: Dominating Set, Relatively Prime Dominating Set, Vertex Switching.

AMS classification: 05C69.

1 Introduction

The theory of domination, like many other topics in graph theory was motivated by the study of games and recreational mathematics. The origin of Domination theory in graphs dates back to 1862 when de Jaenisch studied the problem of determining the minimum number of queens which are necessary to cover an $n \times n$ chessboard. Around 1964, Yaglom studied the chessboard problems in detail and produced solutions to some of them. Haynes et.al.[3, 4] covers the basics of domination and major research accomplishments on domination till 1998. Domination theory is one of the most flourishing branches of graph theory today. The originators of dominating sets are Berge and Ore. Most of the credit for giving the intuitive notion of a dominating set in a precise mathematical definition can be given to them. The earliest theorems concerning dominating sets can be found in their books, namely, Theory of graphs and its applications[1] and Theory of graphs[7]. Although a few research papers on domination were published between 1958 and 1975, a survey paper by E.J. Cockayne and S.T. Hedetniemi[2] served to focus attention on the subject sufficiently to get the ball rolling. Domination in graphs along with its many variations provides an extremely rich area of study. There has been an enormous and speedy growth of research in this field and varieties of

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NEUTROSOPHIC SETS EXTENSION OF FUZZY SETS – AN OVERVIEWMahizha JC ¹ and Immaculate Mary M ²¹Department of Mathematics, Holy Cross College(Autonomous), Nagercoil.² Department of Mathematics, Noorul Islam Centre for Higher Education, Kumarakoil.E-mail:¹ mahidhas7@gmail.com and ² imma_arul@yahoo.com**Abstract**

In this review article, we present a factor of the procedure improvement in the powerful mathematical tool in an uncertain environment as a neutrosophic set. Which is an extension of the classical set, fuzzy set, and intuitionistic fuzzy set theory. The intentions of this review are to talk about the generalization of the neutrosophic set and its development methods. During this era, there are divergent approaches and developments to neutrosophic insight, as expressed by the essentials in their various fields. This article is look forward to sharing the enhancement of the neutrosophic set recently and present talks. Also, a comparative study for the existing sets (Fuzzy sets, intuitionistic fuzzy sets, neutrosophic sets, interval-valued neutrosophic sets, and single-valued neutrosophic sets) is provided.

Key words: Fuzzy sets, intuitionistic fuzzy sets, neutrosophic sets, interval-valued neutrosophic sets, single-valued neutrosophic sets, truth membership function, indeterminacy membership function, and falsity membership function.

AMS classification: 03E72

1 Introduction

The concept of fuzzy sets was introduced by Zadeh.L in 1965 [24]. It is the most constructive tool for handling fuzzy quantities which have only one membership value and is unable to describe non-membership value ie, the vagueness of the problem. The fuzzy set theory requires that there exists a degree of membership function for every ingredient level of contribution for real-world problems. Problems that involve imprecision, vagueness, and uncertainty, the concept of the fuzzy set has been the focus of various due to its aptness to mock human understanding and sense using verbal information. Many assumptions were later introduced with the aim of inscribing the issue of impreciseness but in a different form of construction. Since then, fuzzy sets are used globally in many applications involving uncertainty. But it is observed that there still remain some situations that cannot be enclosed by fuzzy sets and so the concept of interval-valued fuzzy sets (Turksen 1986 [21]) came into constrain to entrap those situations, even if Fuzzy set theory is victorious in handling uncertainties rise from vagueness or partial attachment of an element in a set, it cannot model all sorts of uncertainties making in different real-life



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**THE GEODETIC COTOTAL DOMINATION NUMBER FOR TOTAL GRAPH
OF SOME STANDARD GRAPHS**

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Abstract

In this paper, we investigate the geodetic cototal domination number for total graph of some standard graphs. A set S is called a geodetic cototal dominating set of G if S is both geodetic and cototal dominating set of G . The geodetic cototal domination number is the minimum cardinality of a geodetic cototal dominating set in G .

Key words: Geodetic set, Dominating set, Domination number, Cototal Dominating set, Cototal Domination number, Geodetic Cototal Domination number, Total graphs

AMS classification: 05C12, 05C69

1 Introduction

By a graph $G = (V, E)$ we mean a finite, connected, undirected graph with neither loops nor multiple edges. The order $|V|$ vertices and size $|E|$ edges of G are denoted by m and n respectively. For graph theoretic terminology, we refer to West [7]. A vertex of degree 0 is called an isolated vertex and a vertex of degree 1 is called an end vertex or pendant vertex. A vertex v of G is said to be extreme vertex if the subgraph induced by its neighbourhood is complete. The set of all extreme vertices is denoted by $Ext(G)$. For vertices x and y in a connected graph G , The distance $d(u, v)$, between two vertices u and v in a connected graph

G is the length of a shortest $u - v$ path in G . An $u - v$ path of length $d(u, v)$ is called an $u - v$ geodesic. For two vertices u and v , the closed interval $I[u, v]$ consists of u and v together with all vertices lying in a $u - v$ geodesic. If u and v are adjacent, then $I[u, v] = \{u, v\}$. For a set S of vertices, let $I[S] = \bigcup_{u, v \in S} I[u, v]$. Then certainly $S \subseteq I[S]$. A set $S \subseteq V(G)$ is called a geodetic set of G if S is the minimum order of its geodetic set and any geodetic set of order $g(G)$ is a geodetic basis or g -set of G . The geodetic number was studied in [2].

A set $S \subseteq V(G)$ a graph G is a dominating set of G if every vertex v in $V - S$, there exists a vertex $u \in S$ such that v is adjacent to u . The domination number of G , denoted by $\gamma(G)$,



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RESULTS ON ECCENTRIC HYPERGRAPHSSelva Renuka P ¹ and Angel Jebitha MK ²¹Research Scholar, Reg No: 18123152092024, Manonmaniam Sundaranar University,
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Nagercoil- 629004, Tamil Nadu, India.E-mail:¹ renuka.selva87@gmail.com and ² angeljebitha@holycrossngl.edu.in**Abstract**

Let $\mathcal{H} = (V, E)$ be a hypergraph. The eccentric hypergraph $EH[\mathcal{H}] = (V, E')$ of a hypergraph \mathcal{H} is the hypergraph that has the same vertex set as in \mathcal{H} and the edge set is defined by $E' = \{S_x \subseteq V, x \in S_x / \text{for any vertex other than } x \text{ in } S_x \text{ is an eccentric vertex of } x\}$. In this paper we study about some results on equi-eccentric hypergraphs and Helly property. Further we discuss about vertex deletion, edge deletion and contraction of an edge in hypergraph.

Key words: eccentric hypergraph; r-uniform hypergraph; self-centred; equi-eccentric; Helly property

AMS classification: 05C65 Hypergraph

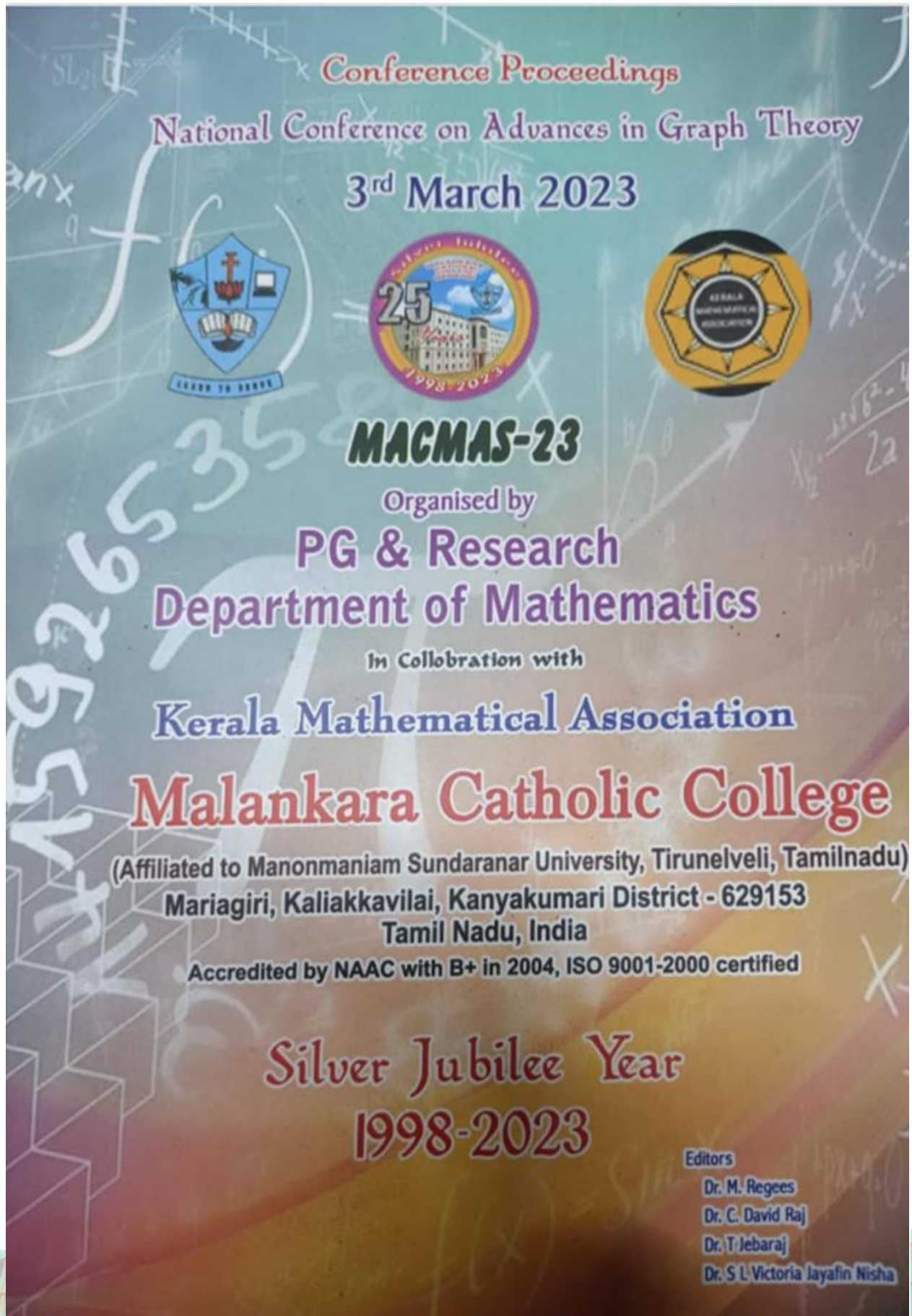
1 Introduction

The notion of the eccentric graph was introduced by v Jin Akiyama, Kiyoshi Ando and David Avis [5]. Self-centred or equi-eccentric graph were studied by J.Akiyama, K. Ando, D.Avis [1] and Buckley [4]. This has led to the study on eccentric hypergraph.

A hypergraph H is defined [1] as a pair $H = (V; E)$, where V is a set of vertices and E is a set of non-empty subsets of V , known as hyperedges or edges. A hypergraph is called simple if it contains no induced edges. For $0 \leq r \leq n$, we define complete r -uniform hypergraph is the simple hypergraph $K_n^r = (X; E)$ such that $|X| = n$ and $E(K_n^r)$ coincides with all the r -subsets of X . A hypergraph $H = (X; E)$ is called bipartite if its vertex set X can be partitioned into two disjoint sets X_1 and X_2 in such a way that each hyperedge of cardinality greater than or equal to two contains vertices from both parts. It means that there is no such hyperedge inside X_1 and there is no such hyperedge inside X_2 . A complete r -partite hypergraph is an r -uniform hypergraph $H = (X; E)$ such that the set X can be partitioned into r -non-empty parts, each edge contains precisely one vertex from each part and all such subsets from E . It is denoted by $K_{n_1, n_2, \dots, n_r}^r$.

The eccentricity $e(v)$ of vertex v is the maximum distance of v to any other vertex of G . Let $H = (X; E)$ be a hypergraph and let $x \in X$. A weak deletion of x from H is the removing of x from set X and from each hyperedge of $E(x)$. Strong deletion of x from H is the removing





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REGULAR NUMBER OF LINE GRAPH OF A FERRERS GRAPH

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Abstract

Let $G = (V, E)$ be a graph, a line graph $L(G)$ is obtained from G by taking each edge as a vertex in $L(G)$ such that two vertices of $L(G)$ are adjacent if and only if the corresponding edges are adjacent. The regular number of $L(G)$ is the minimum number of subsets into which the edge set of $L(G)$ should be partitioned so that the subgraph induced by each subset is regular and is denoted by $r_L(G)$. In this paper the regular number $r_L(G)$ is obtained for the line graph of a Ferrers graph.

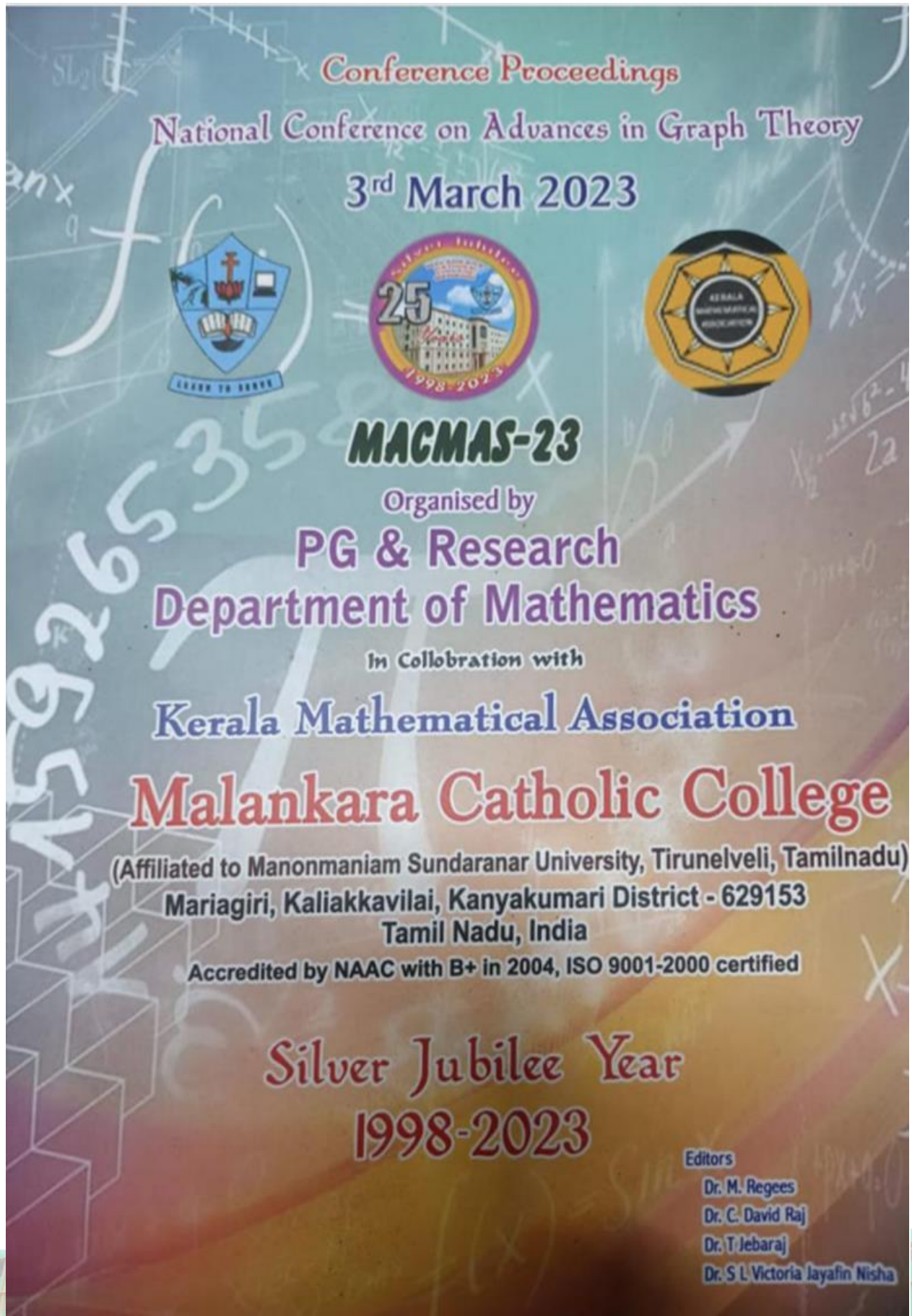
AMS subject Classification: 05C50, 05C25.

Keywords: Ferrers graph, Line graph, Regular number.

1 Introduction

For graph theory notations and terminology not given here we refer it from [2] and [3]. The Ferrers definition is studied from [1], A simple graph G is a Ferrers graph if for all distinct $x, y, z, w \in V$ if $xy \in E$ and $zw \in E$ then either $xw \in E$ or $yz \in E$. Since $xy \in E$ if and only if $yx \in E$ holds for all simple graphs, the definition of Ferrers graph must be extended to if $xy \in E$ and $zw \in E$, then either $xw \in E$ or $yz \in E$ or $xz \in E$ or $yw \in E$. In [5], the line graph of a Ferrers graph is studied and the line graph is defined as in [3]. The line graph of an undirected graph G is another graph $L(G)$ that represents the adjacencies between the edges of G . $L(G)$ is constructed in the following way; for each edge in G , make a vertex in $L(G)$; for every two edges of G that have a vertex in common, make an edge between their corresponding vertices in $L(G)$. In [6], the regular number $r(G)$ of a graph G is the minimum





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RESULTS ON ECCENTRIC TIGHT CYCLE

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Abstract

Let $\mathfrak{H} = (V, E)$ be a hypergraph. The eccentric hypergraph $EH[\mathfrak{H}] = (V, E')$ of a hypergraph \mathfrak{H} is the hypergraph that has the same vertex set as in \mathfrak{H} and the edge set is defined by $E' = \{S_x \subseteq V, x \in S_x / \text{for any vertex other than } x \text{ in } S_x \text{ is an eccentric vertex of } x\}$. In this paper we study about some results on eccentric r -uniform hypergraph and eccentric tight cycle.

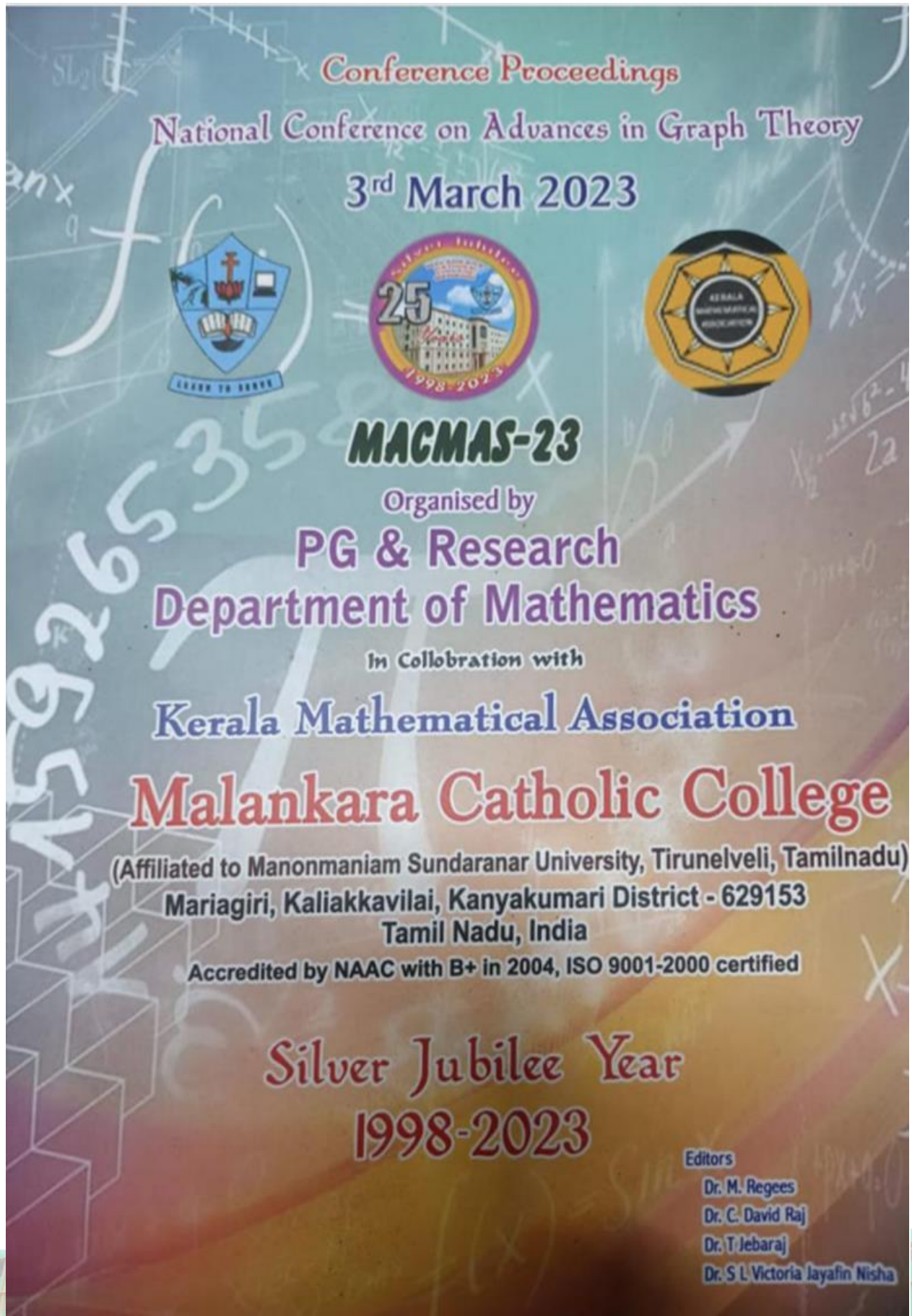
Keywords: eccentric hypergraph, r -uniform hypergraph, tight Hamilton

AMS subject classification: 05C65

1. Introduction

The Hamilton cycles plays a main role in graph theory, a classic result of O. Ore in 1960 is that if the degree sum of any two independent vertices in an n -vertex graph is at least n , then the graph contains a Hamilton cycle. We generalize it in hypergraph. This has led to the study on eccentric tight Hamilton cycle. In [3], the eccentric graph was studied and in [5], the eccentric graph of a hypergraph was introduced and discussed. In this paper we generalise this concept as eccentric hypergraph of a hypergraph.

A hypergraph \mathfrak{H} is defined as a pair $\mathfrak{H} = (V, E)$, where V is a set of vertices and E is a set of non-empty subsets of V , known as hyperedges or edges. A hypergraph is called simple if it contains no induced edges. For $0 \leq r \leq n$, we define complete r -uniform hypergraph to be the simple hypergraph $K_n^r = (X, E)$ such that $|X| = n$ and $E(K_n^r)$ coincides with all the r -subsets of X . A hypergraph $\mathfrak{H} = (X, E)$ is called bipartite if its vertex set X can be partitioned into two disjoint sets X_1 and X_2 in such a way that each hyperedge of cardinality greater than or equal to two contains vertices from both parts. It means that there is no such hyperedge inside X_1 and there is no such hyperedge inside X_2 . A complete r -partite hypergraph is an r -uniform hypergraph $\mathfrak{H} = (X, E)$ such that the set X can be partitioned into r -non-empty parts, each edge contains precisely one vertex from each part and all such subsets from E . It is denoted by $K_{n_1, n_2, \dots, n_r}^r$. In a hypergraph $\mathfrak{H} = (X, E)$, an alternating sequence $x_0 E_0 x_1 E_1 \dots x_{t-1} E_{t-1} x_t$ of distinct vertices x_0, x_1, \dots, x_{t-1} and distinct edges E_0, E_1, \dots, E_{t-1} satisfying $x_i, x_{i+1} \in E_i, i = 0, 1, \dots, t-1$ is called a path connecting the vertices x_0 and x_t . If $x_0 = x_t$ then it is called a cycle. The value of t is called the length of the



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ECCENTRICITY BASED TOPOLOGICAL INDICES OF A NANOROD GRAPH

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Abstract

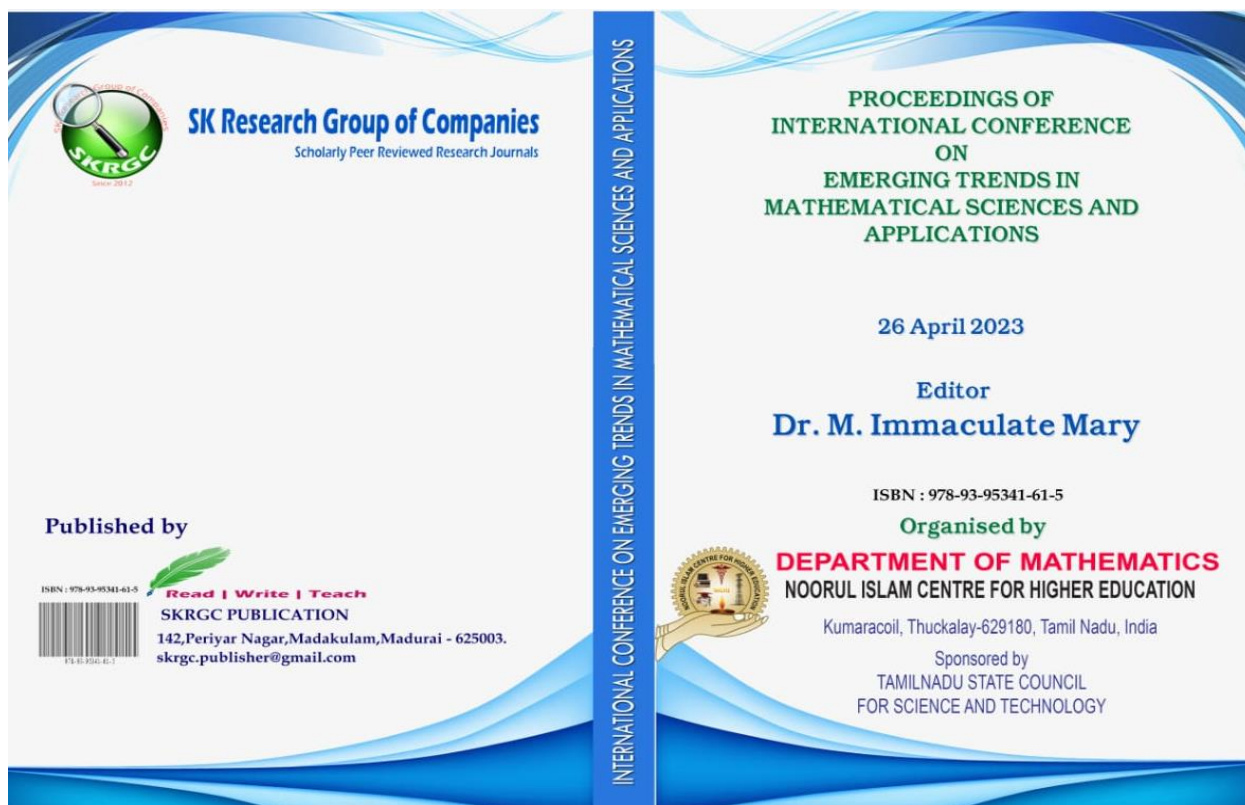
Topological indices defined on the nanomaterials can help to gain a better understanding of their physical and chemical features. The nanorod graph G_{Nr} is a simple connected graph which is constructed with NaOH concentrations as vertices and other reaction parameters such as pH, temperature, time, volume of solvent in given ratio as edges. In this article, the eccentricity based topological indices such as total eccentricity index, Zagreb eccentricity index, average eccentricity of a nanorod graph is studied in detail.

Keywords: nanorod graph, total eccentricity index, Zagreb eccentricity index, average eccentricity.

AMS subject classification:05C90,05C92

1 Introduction

For notation and graph theory terminology not given here, we follow [2]. In recent years, Graph theory is a great interest in the field of mathematical chemistry and which attracted the mathematicians to formulate the chemical structure and material properties. Chemical graph theory has many applications in real life and it became popular among many researchers. The topological index is a numerical invariant of molecular descriptor. A topological descriptor is also known as graph theoretic index, which is a numerical quantity connected with molecular graph structure and it corresponds unique chemical and physical properties. There are different classes of topological indices such as distance based, counting based, degree based and eccentricity based. Among these, eccentricity based topological indices conquered a high importance in the chemical graph theory [9]. Even though, a number of reports describing graph theory of materials chemistry, the study of the eccentricity based topological indices for physical and chemical features of nanostructures has been limited. Hence, we focused to analyze the eccentricity based topological indices for optical properties of nanorods. The authors Sonia et.al [8] studied the bioactivity of CuO nanorods prepared



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Total Certified Domination Number Of Snake Graphs

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Abstract

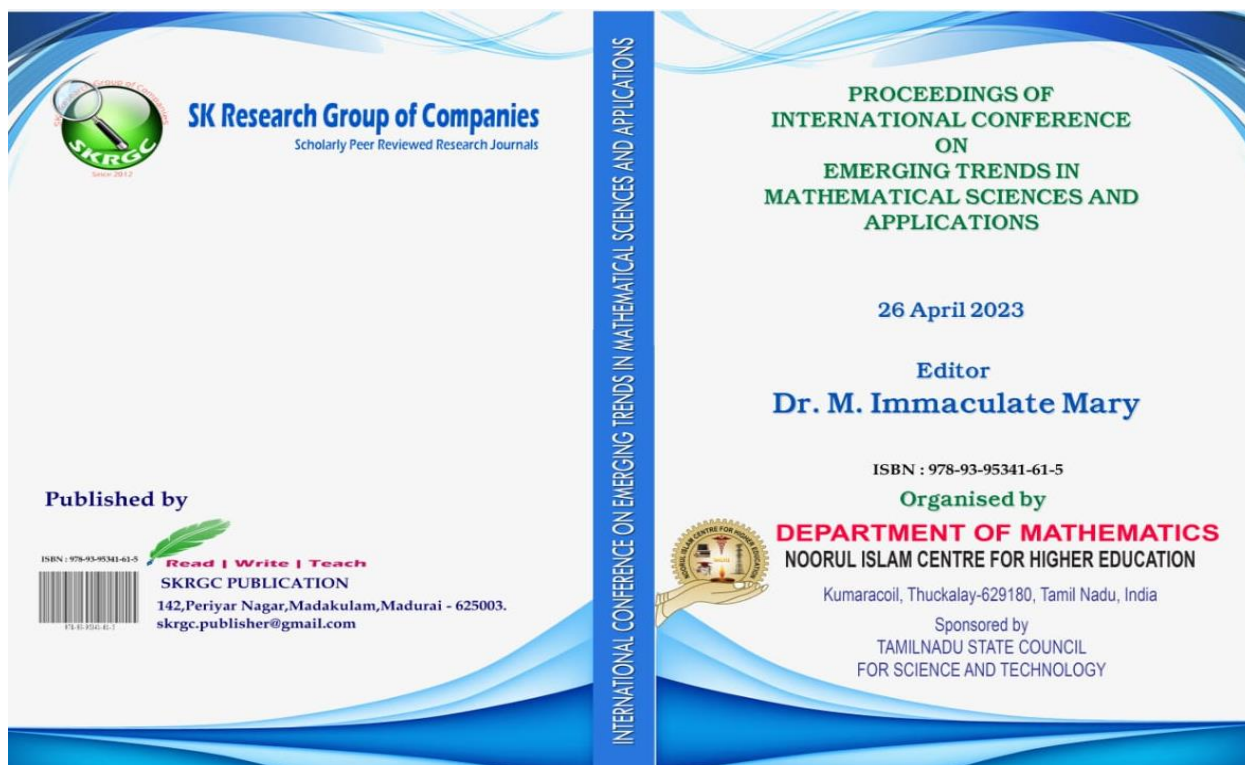
The total certified domination number for snake graphs is discussed in this paper. The total dominating set is said to be total certified dominating set if every vertices in D has zero or atleast two neighbors in $V(G) - D$. The minimum cardinality taken over all the total certified dominating set is called the total certified number and is denoted by $\gamma_{tcer}(G)$. The total certified domination number is computed for different graphs including the double alternative quadrilateral snake graph and double quadrilateral snake graph etc.

Keywords: Domination, Total domination number, Total certified domination number.

AMS Subject Classification : 05C69.

1 Introduction

Let $G = (V, E)$ be a finite, undirected graph without loops and multiple edges. A subset D of V of a non trivial graph G is called a dominating set of G if every vertex in $V(G) - D$ is adjacent to atleast one vertex in D [5]. The domination number $\gamma(G)$ of G is the minimum cardinality taken over all dominating set in G . A dominating set D of a graph G is said to be certified dominating set if every vertex in D has either zero or atleast two neighbors in $V(G) - D$ [2]. A dominating set D is said to be total dominating set if $\langle D \rangle$ has no isolated vertices. The minimum cardinality taken over all total dominating set is called the total domination number and is denoted by $\gamma_t(G)$ [6]. The concept of total certified domination number of graphs was introduced by V.G.Bhagavathi Ammal and A.Janani in 2019 [1]. In this paper, the concept is extended to Total Certified Domination Number of snake graphs. Total dominating set D of a graph $G = (V(G), E(G))$ is said to be total certified dominating set if every vertices in D has either zero or atleast two neighbors in $V(G) - D$. The minimum cardinality taken over all the total certified dominating set in G is called the **Total Certified Domination Number** of a graph G and it is denoted by $\gamma_{tcer}(G)$ [1]. A **double alternate triangular snake graph** $D(A(T_n))$ consists of two alternate triangular snakes that have a common path. In other words double alternate



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Solving the Sequencing Problems with Interval Valued Trapezoidal Neutrosophic Number

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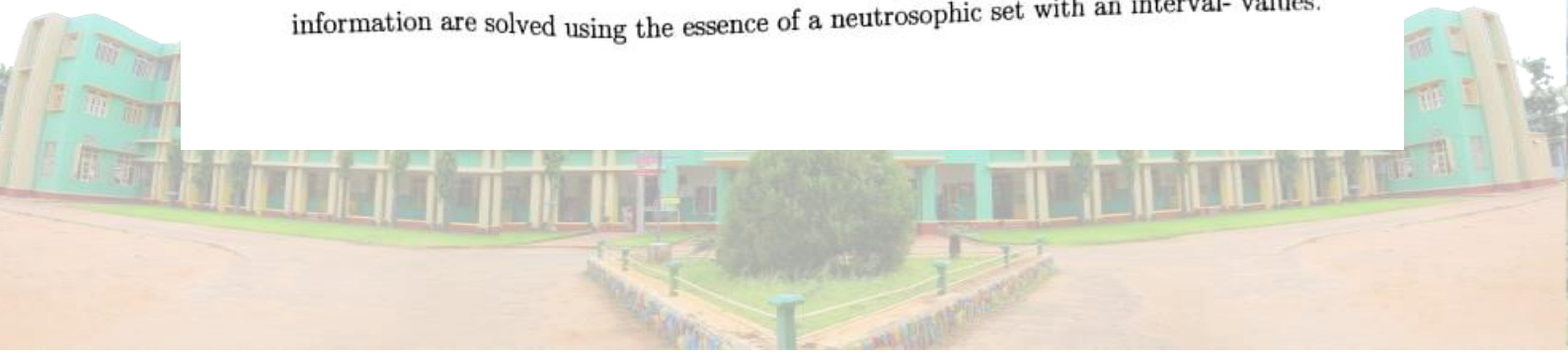
Abstract

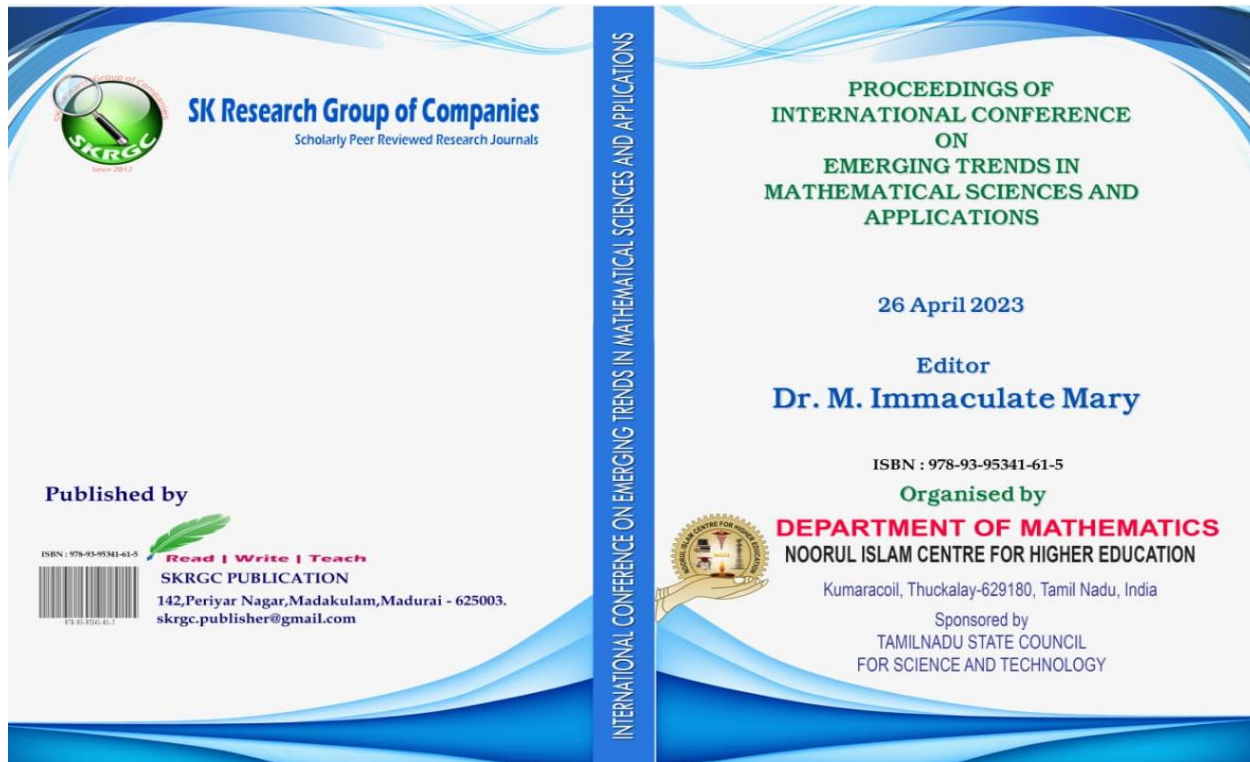
The present article aims to introduce some score function techniques for getting an accurate solution for the neutrosophic sequencing problem. Here, the values are given as trapezoidal neutrosophic numbers with interval values, which will be transformed into crisp numbers using the proposed score function technique. The result of the given neutrosophic sequencing problem satisfies the required conditions for the crisp sequencing problem. We are using the score function technique to track the machines' minimum elapsed time and idle time.

Keywords: *Neutrosophic sequencing problem, Interval-valued trapezoidal neutrosophic numbers, elapsed time, idle time.*

Introduction

In 1965, L. Zadeh proposed his notable concept of fuzzy sets [1]. Then Turksen [2] initiated the fuzzy sets with interval values. But the fuzzy sets defined only the membership function, not the hidden non-membership function. At that time, Atanassov introduced intuitionistic fuzzy sets representing both membership and non-membership functions. Moreover, there exist some situations that have notable functions other than membership functions and non-membership functions. F Smarandache introduced neutrosophic sets in 1995 [4, 5] which are characterized by independent membership, indeterminacy, and non-membership functions. The unique concept of the interval neutrosophic set proposed by Wang, Smarandache, Zhang & Sunderraman (2005) [6], is an elongation of the neutrosophic set. Complicated real-world problems which contain uncertain, inaccurate, defective, and inconsistent information are solved using the essence of a neutrosophic set with an interval- values.





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Domination Uniform Subdivision Number of G^{-+-}

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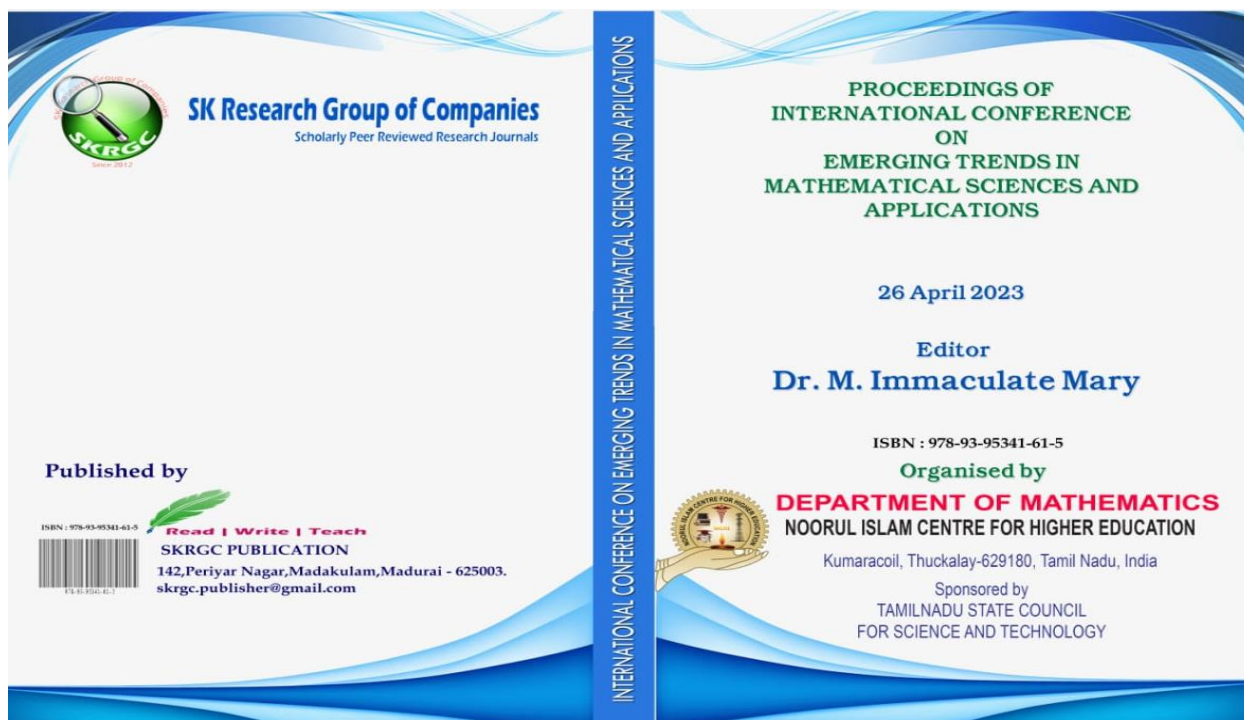
Abstract

Let $G = (V, E)$ be a simple undirected graph. A subset D of $V(G)$ is said to be dominating set if every vertex of $V(G) - D$ is adjacent to at least one vertex in D . The minimum cardinality taken over all minimal dominating sets of G is the domination number of G and is denoted by $\gamma(G)$. The domination uniform subdivision number $usd_\gamma(G)$ is the least positive integer k such that the subdivision of any k edges from G results in a graph having domination number greater than that of G . The transformation graph G^{-+-} of G is a simple graph with vertex set $V(G) \cup E(G)$ in which adjacency is defined as follows: (a) two elements in $V(G)$ are adjacent if and only if they are non-adjacent in G (b) two elements in $E(G)$ are adjacent if and only if they are adjacent in G and (c) an element of $V(G)$ and an element of $E(G)$ are adjacent if and only if they are non-incident in G . In this paper, we obtain domination uniform subdivision number of transformation graphs of some standard graphs. Also we characterize sd_γ -critical graphs on G^{-+-} . Further we determine $usd_\gamma(G^{-+-})$ where $diam(G) \geq 3$.

Keywords : domination, domination subdivision and domination uniform subdivision
AMS Subject Classification : 05C69.

1. INTRODUCTION

Let $G = (V, E)$ be a simple undirected graph of order n and size m . If $v \in V(G)$, then the *neighborhood* of v is the set $N_G(v)$ (or $N(v)$) consisting of all vertices u which are adjacent to v . The *closed neighborhood* is $N_G[v] = N_G(v) \cup \{v\}$. The *degree* of v in G is $|N(v)|$ and is denoted by $deg(v)$. The *minimum degree* of G is $\min\{deg_G(v) : v \in V(G)\}$ and is denoted by $\delta(G)$. A vertex v is said to be *pendant vertex* if $deg(v) =$



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Domination And Cluster Domination In Cluster Hypergraphs

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Abstract

Let X be a nonempty set and let V_X be a subset of $P(X)$ such that $\emptyset \notin V_X$ and $X \subset V_X$. Let E be a multi-set whose elements belong to $P(P(X))$ such that

(i) $E \neq \emptyset$

(ii) For each element $e \in E$, there exists atleast one element $v \in V_X$ such that $v \in e$.

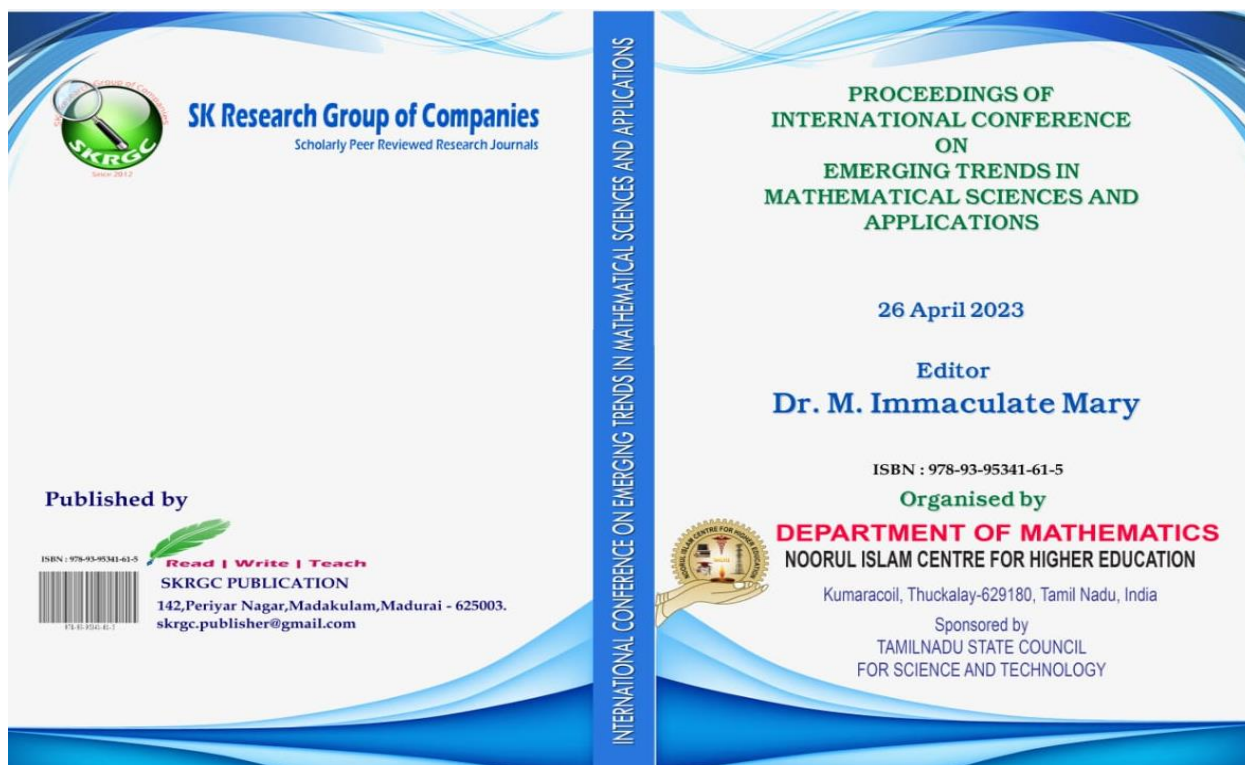
Then $H = (V_X, E)$ is called as the Cluster Hypergraph, where V_X is said to be vertex set and E is said to be multi-hyper edge set. The domination number and Cluster domination number of some cluster hypergraphs have been discussed in this paper.

Key words: Cluster hypergraph, Adjacent, Cluster adjacent, Cluster domination number, Minimal cluster domination number,

AMS Subject Classification: 05C65

1 Introduction

The term domination set and domination number was introduced by Oystein Ore [5]. The domination was studied from 1950's onwards, but the rate of research on domination significantly increased in the middle of 1970's [4]. The hypergraph is a generalization of a graph in which edge can connect any number of vertices. In 1973 Berge introduced the concept of hypergraphs [2] - [3]. An cluster hypergraph are introduced to generalize the concept of hypergraph, where cluster nodes are allowed. The cluster hypergraph was introduced by S. Samantha in 2020 [7]. The cluster adjacent and the cluster domination number of cluster hypergraph, the relation between the domination number and the cluster domination number, and also $\gamma(H)$ and $\gamma_1(H)$ of connected cluster hypergraph, complete (m, n) -uniform cluster hypergraph have been determined and discussed in this paper.



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The Geometric-Arithmetic Index And The Atom-Bond Connectivity Index Of A Nanorod Graph

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Abstract

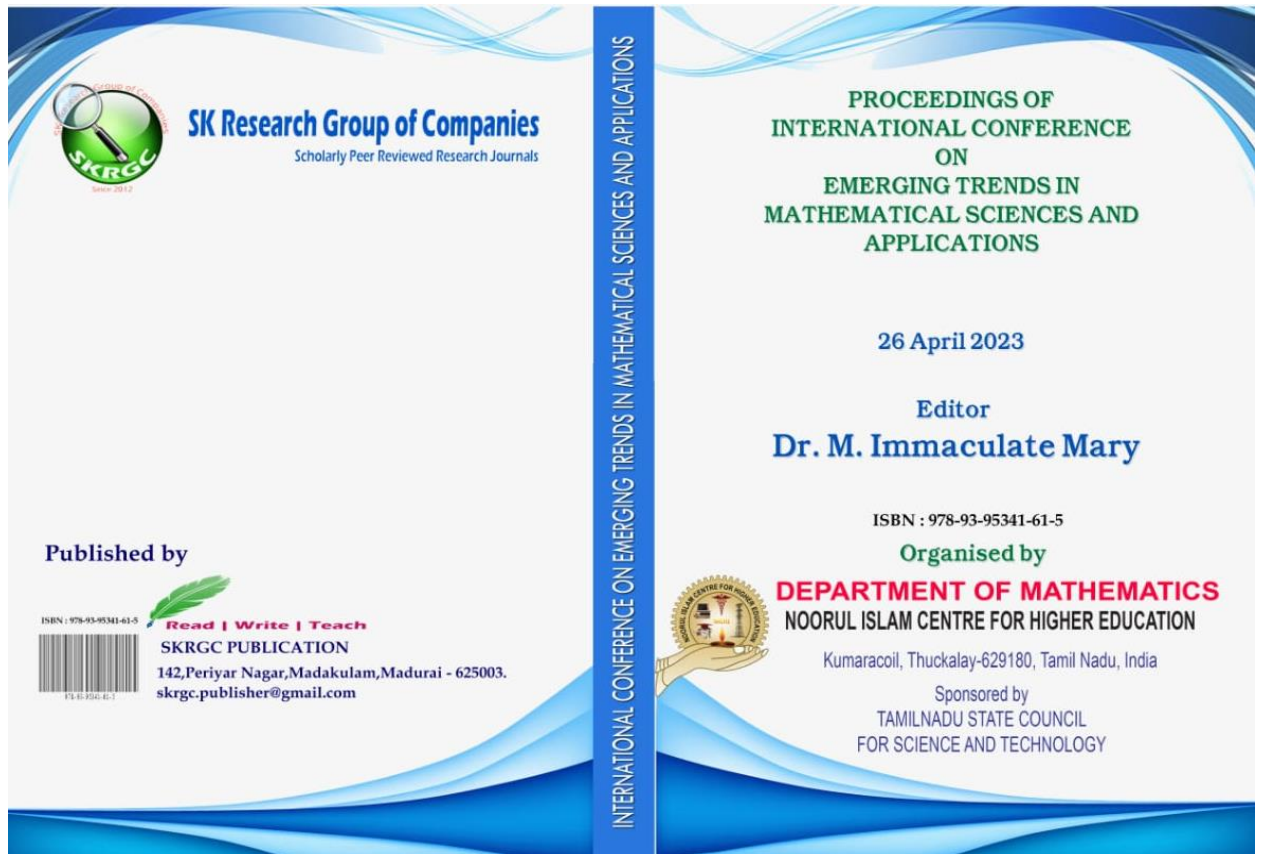
The Nanorod graph G_{Nr} is a simple connected graph which is constructed with NaOH concentration as vertices and other reaction parameters such as pH, temperature, time, volume of solvent in a given ratio as edges. In this article, we discuss the eccentricity based topological indices, the Geometric-arithmetic index, and the atom-bond connectivity index of a Nanorod graph.

Keywords: Nanorod graph, Geometric-arithmetic index, the atom-bond connectivity index.

AMS subject classification:05C90,05C92

1 Introduction

For notation and graph theory terminology not given here, we follow [2]. Chemical graph theory has many applications in day-to-day life and so popular among many researchers. A numerical invariant of molecular descriptor is called the topological index. This topological descriptor is also known as graph theoretic index, which is a numerical quantity connected with molecular graph structure and it corresponds unique chemical and physical properties. There are different classes of topological indices such as distance based, counting based, degree based and eccentricity based. Among these, eccentricity based topological indices conquered a high importance in the chemical graph theory [9]. Even though, a number of reports describing graph theory of materials chemistry, the study of the eccentricity based topological indices for physical and chemical features of nanostructures has been limited. Hence, we focused to analyze the eccentricity based topological indices for optical properties of Nanorods. The authors Sonia et.al [8] studied the bioactivity of CuO Nanorods prepared under various concentrations of NaOH. The authors of the present work defined and generated the Nanorod graph [6] by using [8] and various graphical parameters are studied in [6]. The eccentricity based topological indices



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The geodetic number of splitting graph of a graph

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Abstract

For a graph G the splitting graph $S(G)$ of G is obtained by adding a new vertex v' corresponding to each vertex v of G such $N(v) = N(v')$. In this article, we studied the concept of geodetic number of splitting graph of a graph.

Keywords: splitting graph of a graph, distance, geodetic number.

AMS Subject Classification:05C12.

1.Introduction

By a graph $G = (V, E)$, we mean a finite, undirected connected graph without loops or multiple edges. The *order* and *size* of G are denoted by n and m respectively. For basic graph theoretic terminology, we refer to [1]. Two vertices u and v are said to be *adjacent* if uv is an edge of G . Two edges of G are said to be adjacent if they have a common vertex. The *neighbors* of a vertex v are the vertices that are adjacent to v , it is denoted by $N(v)$. The *degree of a vertex v* in a graph G is the number of edges incident with v and is denoted by $deg_G(v)$. For any set S of vertices of G , the *induced subgraph* $G[S]$ is the maximal subgraph of G with vertex set S . A vertex $v \in G$ is said to be *extreme* if the $G[N(v)]$ is complete. For a graph G the splitting graph $S(G)$ of G is obtained by adding a new vertex v' corresponding to each vertex v of G such $N(v) = N(v')$. This concepts were studied in [7]

The *distance* $d(u, v)$ between two vertices u and v in a connected graph G is the length of a shortest $u-v$ path in G . An $u-v$ path of length $d(u, v)$ is called an $u-v$ *geodesic*. A vertex v is said to lie on a geodesic P if v is an internal vertex of P . The

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Domination Uniform Subdivision Number of G^{--+} Angel Jebitha M K¹, Berjin Magizha T^{2,a}¹PG and Research Department of Mathematics, Holy Cross College (Autonomous),
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Chunkankadai, Nagercoil -3, Tamil Nadu, India^aCorresponding author e-mail: berjin@sxcce.edu.in**Abstract**

Let $G = (V, E)$ be a simple undirected graph. A subset D of $V(G)$ is said to be dominating set if every vertex of $V(G) - D$ is adjacent to at least one vertex in D . The minimum cardinality taken over all minimal dominating sets of G is the domination number of G and is denoted by $\gamma(G)$. The domination uniform subdivision number $usd_\gamma(G)$ is the least positive integer k such that the subdivision of any k edges from G results in a graph having domination number greater than that of G . The transformation graph G^{--+} of G is a simple graph with vertex set $V(G) \cup E(G)$ in which adjacency is defined as follows: (a) two elements in $V(G)$ are adjacent if and only if they are non-adjacent in G (b) two elements in $E(G)$ are adjacent if and only if they are not adjacent in G and (c) an element of $V(G)$ and an element of $E(G)$ are adjacent if and only if they are incident in G . In this paper, we obtain domination uniform subdivision number of transformation graphs of some standard graphs. Also we determine the lower bound of $usd_\gamma(G^{--+})$ for any graph G .

Keywords : domination, domination subdivision and domination uniform sub division**AMS Subject Classification:** 05C69.**1. Introduction**

Let $G = (V, E)$ be a simple undirected graph of order n and size m . If $v \in V(G)$, then the neighborhood of v is the set $N_G(v)$ (or $N(v)$) consisting of all vertices u which are adjacent to v . The closed neighborhood is $N_G[v] = N_G(v) \cup \{v\}$. The degree of v in G is $|N(v)|$ and is denoted by $deg(v)$. The minimum degree of G is $\min\{deg_G(v) : v \in V(G)\}$ and is denoted by $\delta(G)$. A vertex v is said to be pendant vertex if $deg(v) = 1$. A path, a cycle and a complete graph on n vertices are denoted by P_n, C_n and K_n respectively. A complete bipartite graph is denoted by $K_{m,n}$. A graph is said to be connected if there exists a path between any pair of vertices. Otherwise it is said to be disconnected. The distance $d(u, v)$ between two vertices u and v of a connected graph G is defined to be the length of any shortest path joining u and v . A shortest $u - v$ path is often called as geodesic. The diameter of a connected graph G is the length of any longest geodesic and is denoted by $diam(G)$.

A subset D of $V(G)$ is said to be dominating set if every vertex of $V(G) - D$ is adjacent to at least one vertex in D . The minimum cardinality taken over all minimal dominating sets of G is the domination number of G and is denoted by $\gamma(G)$.





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Eccentricity Based Topological Indices of a Nanorod Graph- A Comparative Study

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Abstract

In this article, we determine the eccentricity based topological indices of a Nanorod graph. Also, we compare few eccentricity based indices such as the total eccentricity index, the first, second and third Zagreb indices, average index, the atom-bond connectivity index and the Geometric arithmetic index.

Key words: Nanorod graph, total eccentricity index, Zagreb eccentricity index, average eccentricity, the atom-bond connectivity index, Geometric arithmetic index.

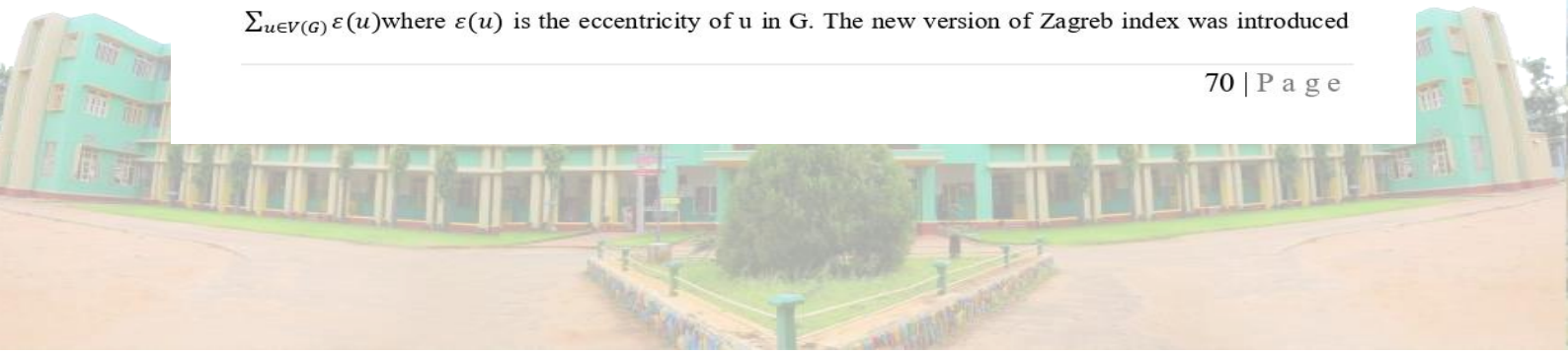
AMS subject classification: 05C90, 05C92, 05C05

1 Introduction

For notation and graph theory terminology we follow [3]. In recent years, Graph theory is very much applied in the field of mathematical chemistry where the mathematicians use it to formulate the chemical structure and material properties. The topological index is a numerical invariant of that QSPR/QSAR. A topological descriptor is also known as graph theoretic index, which is a numerical quantity connected with molecular graph structure and it corresponds unique chemical and physical features and biological activities. There are different classes of topological indices such as distance based, degree based and eccentricity based. Among these, eccentricity based topological indices conquered a high importance in the chemical graph theory [14]. Even though, a number of reports describing graph theory of materials chemistry, the study of the eccentricity based topological indices for physical and chemical features of nanostructures has been limited. Hence, we focused to analyze the eccentricity based topological indices for optical properties of Nanorods. The authors Sonia et.al [13] studied the bioactivity of CuO Nanorods prepared under various concentrations of NaOH. S. Sobia, S. Sujitha and M.K. Angel Jebitha generated the Nanorod graph [10] by using [13] and various graphical parameters are studied in the previous work [10]. The eccentricity based topological indices such as the total eccentricity index, Zagreb index, average eccentricity index, the atom-bond connectivity index and the Geometric –arithmetic index are studied the same authors in [11,12]

In this article, we consider a simple connected graph namely Nanorod graph G_{Nr} with vertex set $V(G) = \{v_1, v_2, v_3, \dots, v_n\}$ and edge set $E(G)$ to study the eccentricity based topological indices. The vertices of G_{Nr} correspond to NaOH concentration and an edge between two vertices corresponding to the UV spectrum (pH, temperature, time, volume of solvent in a given ratio) of these NaOH concentration. The distance is known as the shortest path and is denoted by $d(u, v)$. The eccentricity $\varepsilon(u)$ is defined as the largest distance between u and any other vertex v in G.

The total eccentricity index is defined as the summation of maximum distance of every vertex in G and this index was introduced by Fdrooquet.al.[1,7,8]. The total eccentricity index is $\xi(G) = \sum_{u \in V(G)} \varepsilon(u)$ where $\varepsilon(u)$ is the eccentricity of u in G. The new version of Zagreb index was introduced



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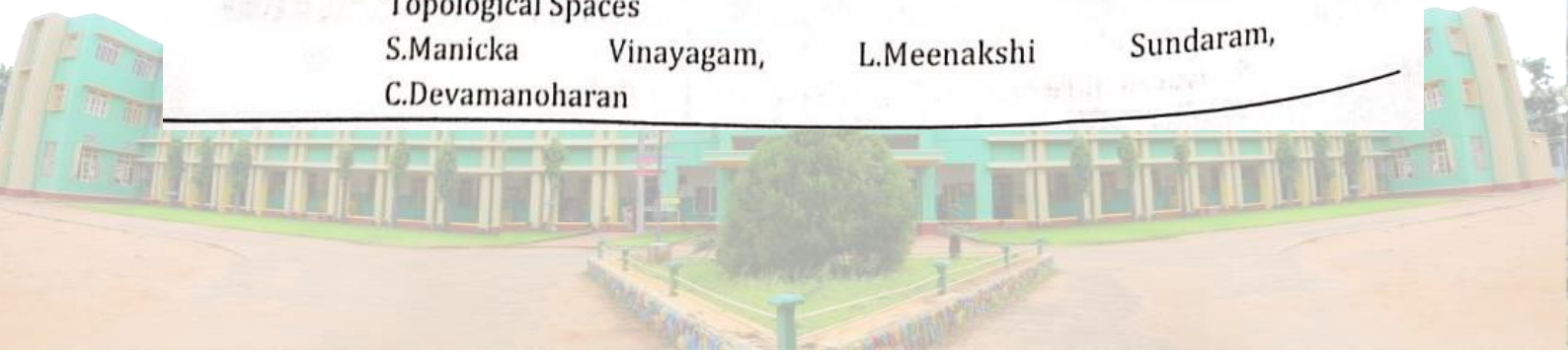
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SPLIT DOMINATION IN FUZZY MAGIC GRAPH

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ABSTRACT

In this article, we have discussed about the Split Dominating Fuzzy Magic set and Split Domination Fuzzy Magic Number for cycle, Path, Wheel Graph, Complete graph and so on. Also we have derived the relationship between domination number and Split Domination Fuzzy Magic Number.

Keywords: Split Dominating Fuzzy Magic Graph, Split Domination Fuzzy Magic Number, Splitting Graph in Dominating Fuzzy Magic Set.

1. Introduction

In 1736, the concept of graph theory was first introduced by Euler. The concept of Domination in a recent year becomes a subject of interest for many researchers due to the immense application to other field. In 1973, Kaufmann gave the first definition of a Fuzzy Graph which was based on Zadeh's Fuzzy Relations. In 1975, Rosen field introduced the notation of Fuzzy Graph and several Fuzzy analogs of Graph theoretic concepts such as path, cycles etc. A Fuzzy Graph is the generalization of Crisp Graph. A Fuzzy Graph structure is an extension of a Fuzzy Graph.

2. Preliminaries

A subset D of V is said to be a Dominating Set of G if every vertex not in D is adjacent to at least one vertex in D. It is denoted by $\gamma(G)$. Let U and V be two sets. Then ρ is said to be a Fuzzy Relation from U into V if ρ is a Fuzzy Set of $U \times V$. Let G^* be a simple graph. Then $G = (\sigma, \mu)$ is called a Fuzzy Graph on G^* if $\sigma : V \rightarrow [0,1]$ and $\mu : E \rightarrow [0,1]$ for all $xy \in E$, we have $\mu(x,y) \leq \min(\sigma(x), \sigma(y))$. The Fuzzy Set $\sigma(V)$ is called the Fuzzy Vertex Set of G and $\mu(E)$ is called the Fuzzy Edge Set of G. A Fuzzy Graph $G = (V, \sigma, \mu)$ is called a Fuzzy Magic Graph if there are two bijective functions $\sigma : V \rightarrow [0,1]$ and $\mu : V \times V \rightarrow [0,1]$ with restricted the conditions $\mu(u,v) < \sigma(u) + \sigma(v) \leq 1$ for all $u,v \in G$. If the induced sub graph $\langle V - D \rangle$ is disconnected then the dominating set D is called split dominating

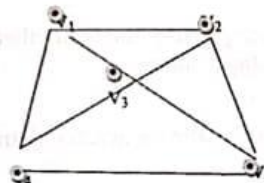
set. For each point v of a graph G, take a new point v'. Join v' to all point of G adjacent to v. The graph S(G) thus obtained is called Splitting Graph of G.

3. MAIN RESULTS

Definition 3.1

Let $\xi = (V, \tau, \mu)$ be a Fuzzy Magic Graph. The Dominating Fuzzy Magic Graph is said to be a Split Dominating Fuzzy Magic Graph if the induced Dominating Fuzzy Magic Sub Graph $\langle V - F, \tau', \mu' \rangle$ is disconnected. The minimum Fuzzy Magic cardinality of a Split Dominating Fuzzy Magic Set is called a Split Dominating Fuzzy Magic number and it is denoted by $\gamma_{sdfm}(\xi)$.

Example 3.1



$F = \{v_3\}, \gamma_{sdfm}(\xi) = 0.3$

Theorem 3.2

For a Wheel Graph W_n , the Split Dominating Fuzzy Magic Set is equal to 1.

Proof: Let $\xi = \langle W_n \rangle$ be a graph with n vertices and it contains a cycle graph of order n-1 and all the vertices of the cycle are connected to a single vertex. The number of edges in a graph ξ is $2n-2$. By the definition of Dominating Fuzzy Magic Graph, The set $F = \{v_i\}, i = 1, 2, 3, \dots, n$. Each vertex in F has at least two neighbors in $\langle V - F, \tau', \mu' \rangle$ and the subgraph induced by F has to be disconnected. Hence F is a minimum split Dominating Fuzzy Magic Set of a graph ξ . Therefore number of split Dominating Fuzzy Magic Set, $\langle W_n \rangle = 1$

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STUDY AND ANALYSIS OF ECG SIGNAL PROCESSING USING MATLAB TOOL

Sheeba Helen. T

Holy Cross College Nagercoil (Autonomous)

Jenifer Christina C.M

Holy Cross College Nagercoil (Autonomous)

ABSTRACT

Recently, there has been an increased focus on developing logical communication between humans and computers. The vision-based interface technology extracts additional information from an input image without the use of expensive hardware. As a result, a vision-based approach is considered an effective way to advance human computer interaction systems. Tools that identify signals and process photos, including medical images and other types of images, are being avidly developed by inventors. To improve and expand this instrument, many scientists and researchers are working. This research effectively uses the MATLAB tool to explore and analyze ECG signal processing. This paper describes ECG signal processing using wavelet transformation and by applying wavelet transformation R peaks of the QRS complex is detected in the ECG signal and thus heart beat can be detected. By Using the MATLAB toolbox and functions correctly we can process and analyze ECG signals both quickly and accurately in real time.

Keywords: ECG (Electrocardiogram), Simulink, sym4, QRS complex, MODWT

INTRODUCTION

Software for high-performance numerical computing and visualization is available under the name MATLAB. With hundreds of built-in functions for technical computation, graphics, and animation, it offers an interactive environment. The best part is that it also offers simple extension using a high-level programming language of its own. MATrixLABoratory is the meaning behind the term MATLAB.

The creators of MATLAB additionally offer a number of extra "toolboxes" that are optional. For specific applications including symbolic computation, image processing, statistics, control system design, and neural networks, these toolboxes are sets of functions. The number of toolboxes is continuously expanding. These toolboxes now number over 50.

WAVELET TRANSFORMATION

Wavelet transformation, specifically wavelet analysis or wavelet transformation is a mathematical technique used in signal processing to analyze and represent signals, including electrocardiogram (ECG) signals. The wavelet transform breaks down a signal into its component frequencies and their respective amplitudes. Wavelet transformation is a powerful tool for ECG signal analysis, as it can capture both the time and frequency information of the signal, and deal with its non-stationary and irregular nature.

ECG SIGNAL ORIGIN

The biomedical signal processing methods are developed and tested using ECG signals mostly from three sources: Biomedical databases or other previously collected ECG data, an ECG simulator, or real-time ECG data gathering are the first two options. The pre-recorded



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INTERNATIONAL CONFERENCE PROCEEDINGS ON TRAVERSING THE
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**A NOVEL METHOD FOR SOLVING TRANSPORTATION
PROBLEMS IN THE FUZZY DOMAIN**

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Abstract

The main aspect of this paper is to find the minimum transportation cost for fuzzy transportation problems. The values of the cost, supply, and demand are taken as trapezoidal fuzzy numbers. The trapezoidal fuzzy number is converted into crisp value using a novel suggested ranking method and also by the Robust ranking technique. An existing method is then applied to obtain the solution. By comparing the results, we can achieve better results with the novel suggested ranking method.

Keywords: Trapezoidal fuzzy number, Fuzzy Transportation problem, Robust Ranking Technique, Ranking function, Minimum Transportation Cost.

1. INTRODUCTION

Transportation Problem is an important problem that has been widely studied in Operations Research domain. It is a special class of linear programming problem which deals with the distribution of a single commodity from various sources of supply to various destinations of demand in such a manner that the total transportation cost is minimized. But in real-life applications supply, demand, and unit transportation cost may be uncertain due to several factors. A fuzzy transportation problem is a transportation problem whose decision parameters are fuzzy numbers. The authors in [2],[3],[4],[5],[6],[7], [10],[12] studied fuzzy transportation problems depending on the ranking function to find the optimal solution. The main aspect of this paper is to find the least transportation cost, where fuzzy demand and supply all are in the form of trapezoidal fuzzy numbers. Here, we are solving the transportation problem using the Robust ranking technique and a new ranking method to convert fuzzy numbers to crisp numbers. Then solve using north northwest corner rule and comparing transportation costs.



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**INTERNATIONAL CONFERENCE PROCEEDINGS ON TRAVERSING THE
TERRAINS OF MULTIDISCIPLINARY RESEARCH**

**APPLICATION OF SINGULAR VALUE DECOMPOSITION IN SUGGESTING
BOOKS FOR e-LIBRARY USERS**

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ABSTRACT

In today's digital age, the availability of books and online libraries has exploded, making it challenging for readers to navigate the vast sea of literary options. A recommendation system for books is a valuable tool in guiding readers to discover new titles that align with their preferences and interests. This abstract explores the development of a recommendation system for books in e-libraries, focusing on an algorithm based on Singular Value Decomposition (SVD).

The exponential growth of online book collections has created a demand for intelligent algorithms capable of personalized book recommendations. Singular Value Decomposition, a dimensionality reduction technique, has proven to be a powerful tool for this purpose. By representing user preferences and book features in a lower-dimensional latent space, SVD can uncover patterns and correlations in user behaviour, making it a popular choice for recommendation systems.

Our recommendation system brings several benefits to e-libraries and readers alike. Readers can explore a diverse range of books tailored to their tastes, fostering a deeper engagement with the e-library. e-libraries benefit from increased user satisfaction and engagement, ultimately leading to higher user retention and content consumption. using a software named "python "we can find the SVD of various matrices both quickly and accurately in real time.



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STOLARSKY-3 MEAN LABELING OF UNION OF GRAPHS

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Abstract

Let $G = (V, E)$ be a simple graph. G is said to be Stolarsky-3 Mean graph if each vertex $x \in V$ is assigned distinct labels $f(x)$ from $1, 2, \dots, q + 1$ and each edge $e = uv$ is assigned with the labels $f(e) = \left\lceil \sqrt{\frac{[f(u)]^2 + f(u)f(v) + (f(v))^2}{3}} \right\rceil$ or $f(e) = \left\lfloor \sqrt{\frac{[f(u)]^2 + f(u)f(v) + (f(v))^2}{3}} \right\rfloor$ then the resulting edge labels are distinct and f is called a Stolarsky-3 Mean labeling of G . In this paper we investigate the Stolarsky-3 mean labeling behavior of union of graphs.

Key words: Graph Labeling, Stolarsky-3 mean labeling, Path graph, Cycle graph, Comb graph, Ladder graph, Corona graph, Union of graphs, Triangular snake graph and Quadrilateral snake graph.

AMS classification: 05C78.

1 Introduction

Let G be a simple, finite and undirected graph with p vertices and q edges. There are several types of labeling and a detailed survey can be found in [2]. For all other standard terminology and notations, we follow [3]. Somasundaram et.al. [9] introduced the concept of Mean labeling. Motivated by this concept, Kavitha et.al introduced a new concept Stolarsky-3 mean graph and they proved that the path graph, cycle graph, comb graph, ladder graph, star graph, triangular snake graph and quadrilateral snake graph are Stolarsky-3 mean graphs in [4]. In [5] Kavitha et.al. proved that the corona graphs $P_n \odot K_{1,2}$, $P_n \odot K_{1,3}$, $C_m \odot K_1$, $C_m \odot K_{1,2}$, $C_m \odot K_{1,3}$ and $C_m \odot K_3$ are Stolarsky-3 mean graphs.

In this paper we study some union of graphs are Stolarsky-3 Mean graphs.

We provide the following definitions which are necessary for our main results.

Definition 1.1 A graph G with p vertices and q edges is said to be Stolarsky-3 Mean graph if each vertex $x \in V$ is assigned distinct labels $f(x)$ from $1, 2, \dots, q + 1$ and each edge $e = uv$ is assigned the distinct labels $f(e) = \left\lceil \sqrt{\frac{[f(u)]^2 + f(u)f(v) + (f(v))^2}{3}} \right\rceil$ or $f(e) = \left\lfloor \sqrt{\frac{[f(u)]^2 + f(u)f(v) + (f(v))^2}{3}} \right\rfloor$ then the resulting edge labels are distinct. In this case f is called a Stolarsky-3 Mean labeling of G .

Definition 1.2 The Ladder graph L_n ($n \geq 2$) is the product graph $P_2 \times P_n$ which contains $2n$ vertices and $3n - 2$ edges.





Smart Supercapacitors
 Fundamentals, Structures, and Applications
 2021, Pages 83-100

Chapter 5 - Fundamentals of supercapacitors

C.G. Jithu^a, S. Virgin Jeba^a, S. Sanis^a, Rajendran Ramachandran^b

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Abstract

Today, the energy crisis and environmental pollution is a big issue and stimulated the development of clean and renewable energy storage systems. **Supercapacitors (SCs)** also known as ultra-capacitors or electrical double-layer capacitors, offer very high capacitance in a small package which becomes one of the rapid energy storage systems. With lower voltage limits, it acts as a bridge between rechargeable batteries and electrolytic capacitors. It acquires electric energy in the form of the electric field which amidst the two conducting plates and enables the ample charge–discharge cycles than batteries. This leads SCs to be more active in uninterruptible power supply (UPS), active filters, traction, electric, and automotive drives and so captured the attention in society. The key features of the present chapter are to explore the recent developments and types of SCs, present the structure of SC, include a brief overview of the process of charging and discharging, and discuss the impact on the performance of SCs at various operating conditions.

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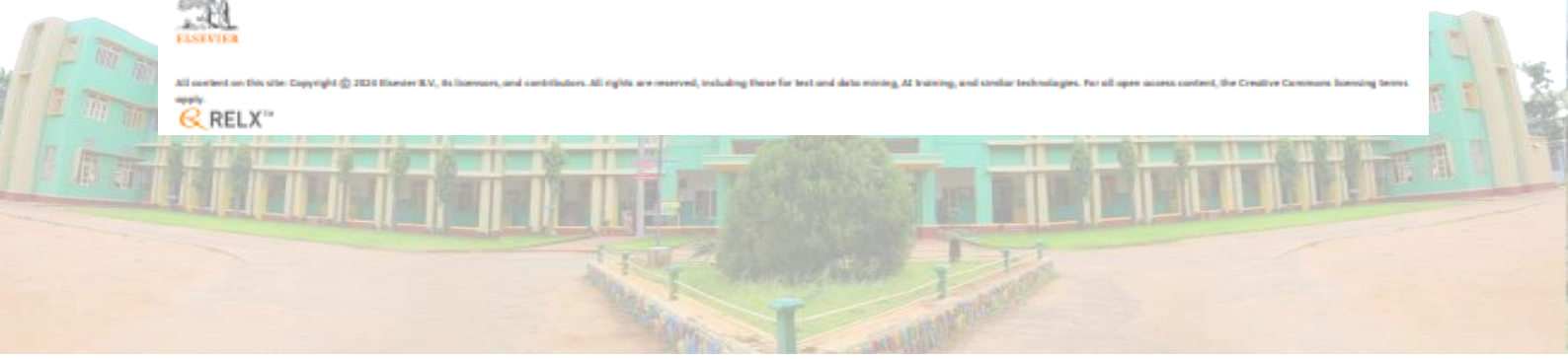
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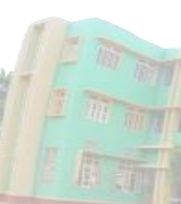
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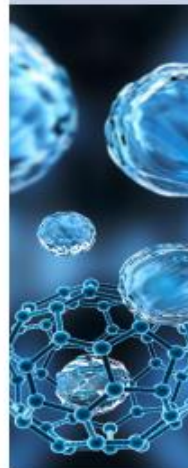




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3. Conclusion:

In this article, we propose 3D model Hamiltonian including lower order molecular excitations with non-linearity by using the exciton, phonon and the phonon-exciton modes. The perturbation technique is used to construct the soliton solutions. The effect of inhomogeneity on the soliton is studied by carrying out a perturbation analysis. When the inhomogeneity increases, the corresponding potential also becomes large and hence splitting of soliton takes place. Thus, the results of perturbation analysis show that the inhomogeneity affects the stability of soliton.

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HYDROXYAPATITE (HAp) AS AN EFFECTIVE ADSORBENT FOR ORGANIC EFFLUENTS: A REVIEW

V.Bhuvaneshwari^a S.Sonia^{b*}

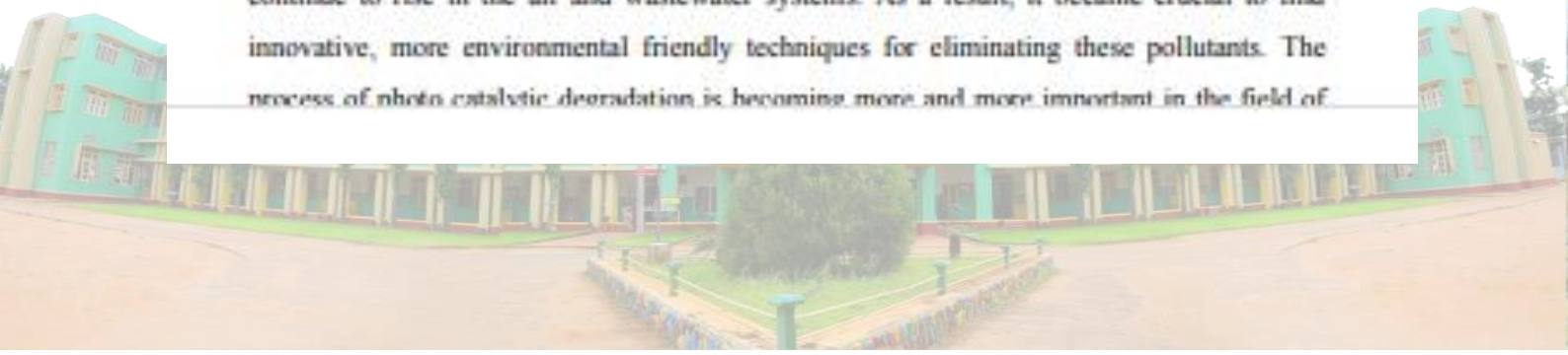
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Abstract

Environmental rules and regulations are uniformly enforced as stubborn organic pollutants continue to rise in the air and wastewater systems. As a result, it became crucial to find innovative, more environmental friendly techniques for eliminating these pollutants. The process of photo catalytic degradation is becoming more and more important in the field of

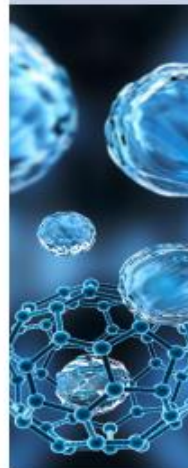




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THE STUDY OF STRUCTURAL AND OPTICAL PROPERTIES OF IRON OXIDE NANOPARTICLES

V. Biolin Vabisha, S. Lisa, **M. Abila Jeba Queen***

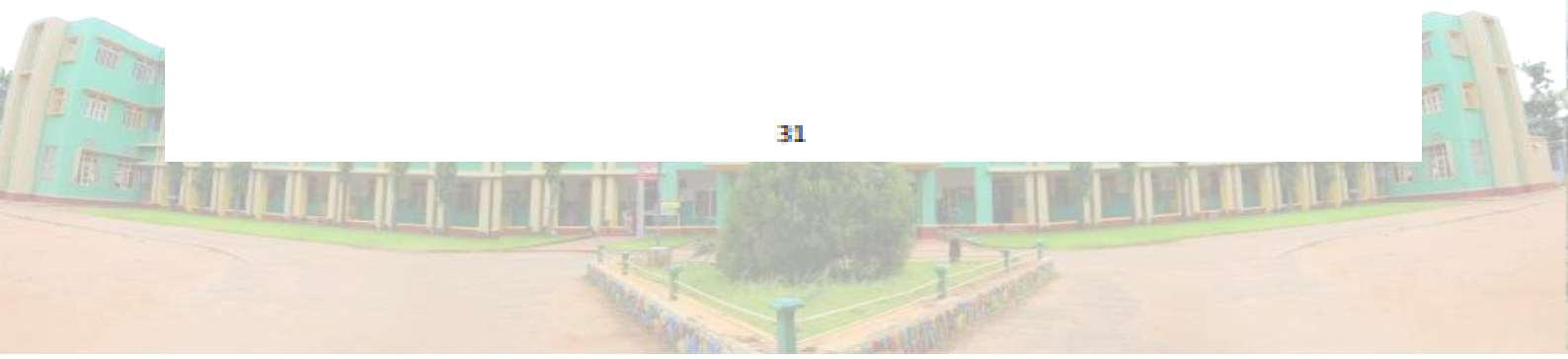
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ABSTRACT

Iron oxide nanoparticles were synthesized by means of simple chemical precipitation method. Ferric chloride and Oxalic acid was used as a starting material and the aqueous solution potassium hydroxide solution was used for this synthesis. The prepared nanoparticles of metal oxide, iron oxide nanoparticles were characterized by using X-Ray Diffraction (XRD) and Ultra Violet-Visible (UV-Vis) spectroscopic techniques. The average particle size, crystalline structure, phase identification and dislocation densities were determined using XRD analysis. The optical characters such as position of band gap, valance band edge, conduction band edges were analyzed by using UV-Vis Technique.


KEYWORDS: Nickel Oxide, UV Spectroscopy, XRD






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STRUCTURAL, MORPHOLOGICAL AND OPTICAL PROPERTIES OF NiO-Mn₂O₃ NANOCOMPOSITES FOR PHOTODEGRADATION OF DYES

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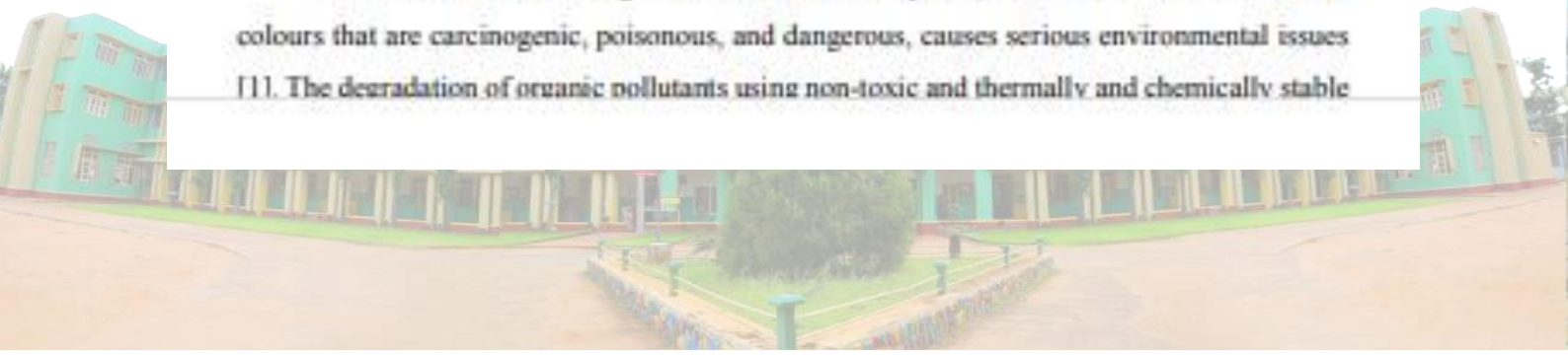
Abstract

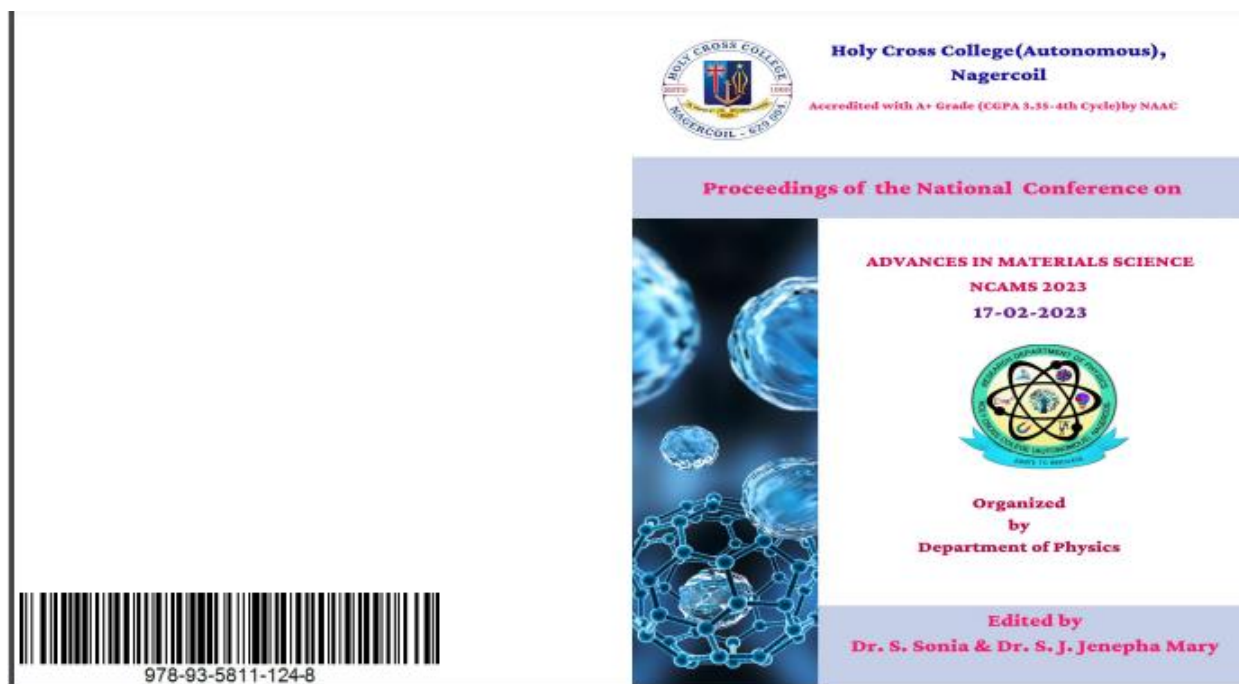
Nickel Oxide (NiO) – Manganese Oxide (Mn₂O₃) nanocomposites with different concentrations are prepared by co-precipitation method. NiO is a p-type semiconductor and has applications such as fuel cells, photocatalytic activity, sensors, electrochromic and chemical sensing devices. The structural properties of the nanocomposites are studied from Powder XRay Diffraction (PXRD). The structure of NiO and Mn₂O₃ are found to be cubic with JCPDS card no. 65-2901 and 89-2809. The morphology of the sample is analyzed by Field Emission Scanning Electron Microscope (FESEM) and agglomerated particles are observed from the FESEM images. The optical properties are obtained from Photoluminescent (PL) analysis. The as-synthesized NiO-Mn₂O₃ nanocomposites can be used for degradation of organic pollutants in waste water.

Keywords: Nanocomposites, Photoluminescence, PXRD, FESEM, Photodegradation

1. Introduction

The wastewater discharged from various enterprises, which is contaminated with colours that are carcinogenic, poisonous, and dangerous, causes serious environmental issues [1]. The degradation of organic pollutants using non-toxic and thermally and chemically stable





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**SYNTHESIS OF RICE HUSK ACTIVATED CARBON (RHAC) AND
COPPER OXIDE INFUSED HIGHLY POROUS RICE HUSK
ACTIVATED CARBON (RHAC/CuO) FOR CAPACITIVE
DESALINATION**

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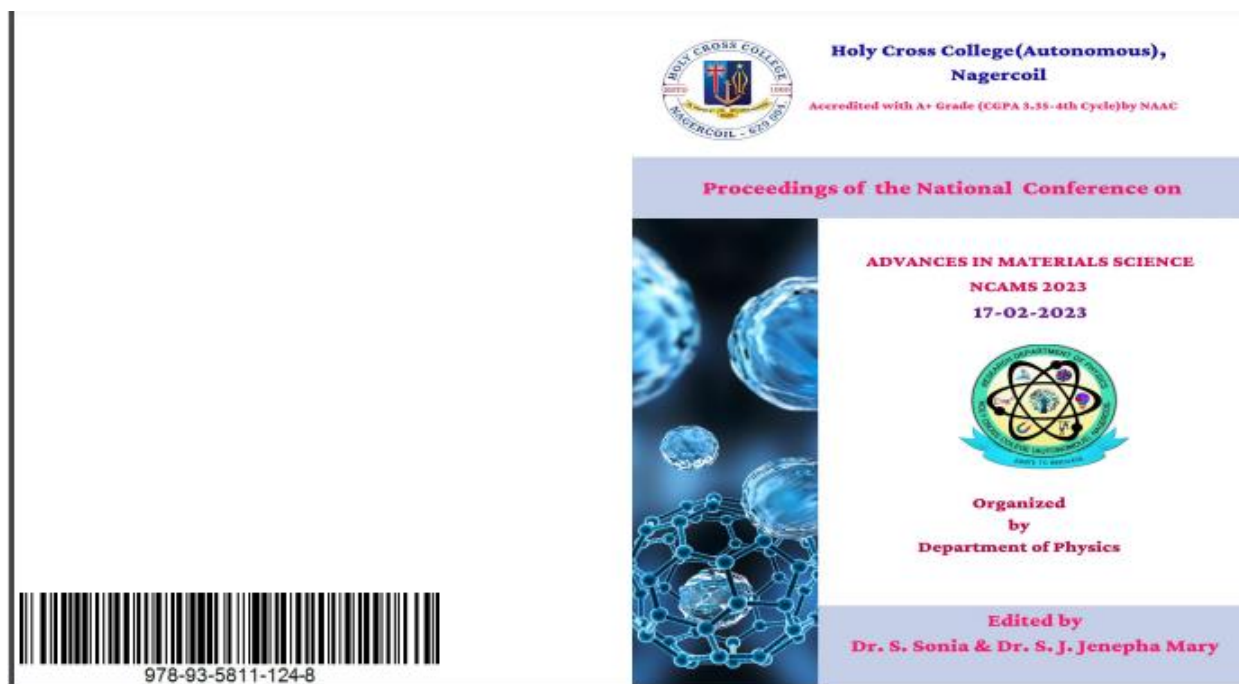
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Abstract

The waste products of agricultural production result in a resource that is not only naturally abundant but also renewable. Step one in the process of making activated carbon from rice husks is given here, and it involves treating the husks with sulfuric acid (H₂SO₄). The structure of activated rice husk carbon electrodes was achieved by the use of a simple and effective thermal technique. The X-ray diffraction (XRD) patterns of the rice husk activated carbon showed typical graphitic peaks, but those of the CuO-decorated rice husk activated carbon (RHAC/CuO) showed crystalline peaks, confirming the crystalline nature of the material. From the SEM analysis, the morphology of the synthesized electrode material is found to be nano petals. The synthesised RHAC/CuO electrode demonstrated good capacitance, adsorption rate, and cyclability. In this work, rice husk activated carbon can be a potential candidate for the removal of harmful ions in desalination applications.

Keywords: Water desalination, metal ion removal, rice husk, activated carbon, copper oxide.



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FT-IR SPECTRAL INVESTIGATION OF ADULTERANTS IN PEPPER

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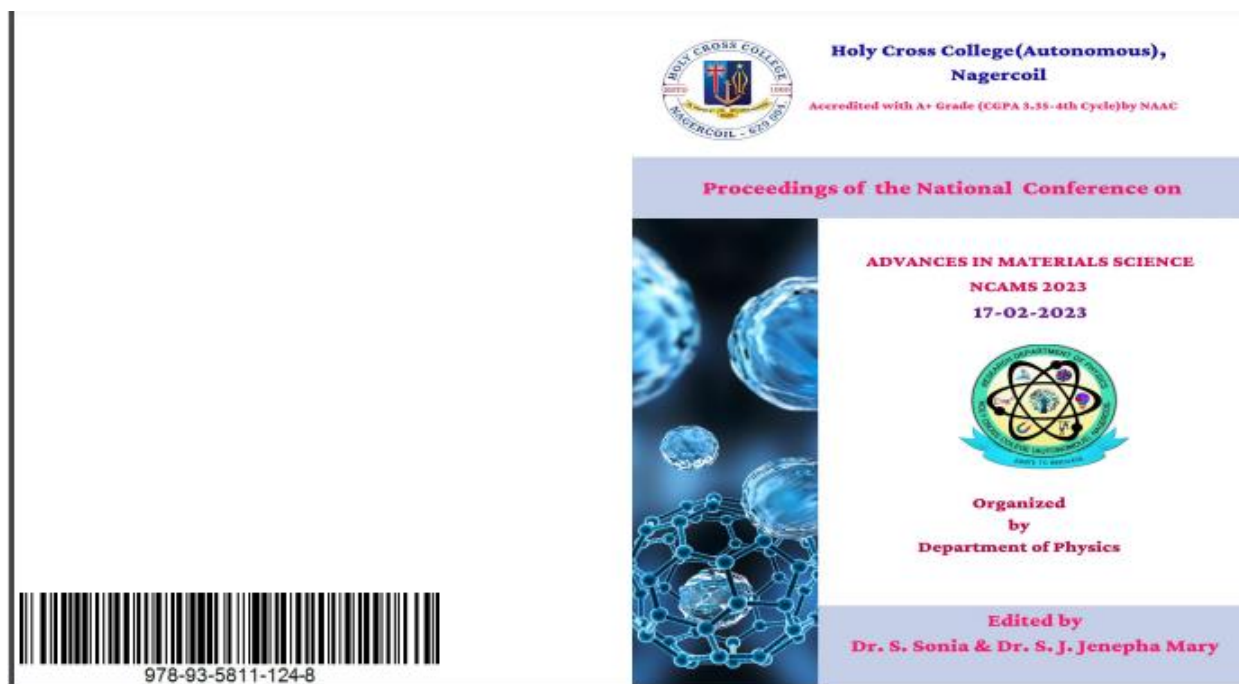
1. INTRODUCTION

Adulteration is the reduction of purity of a substance by the addition of foreign or inferior substance. It is the biggest problem facing the entire world. It affects different people in different ways iSome common adulteration in day to day life can be observed in Milk adulterated by Detergent, Ghee adulterated by Vanaspathi, Analta, Oleomargarine, The present investigation focuses on the spectral investigation of the adulterants lantana camera, carica papaya with black pepper. The most common varieties of pepper produced in Indonesia are Lampung black pepper [1]. They are quite popular due to their superior aroma and taste qualities. Among them, white pepper shows higher demand for export market [2]. Samples under study were collected and prepared by grinding the seeds of lantana camera, carica papaya and black pepper. The dried samples were ground to a fine powder and made into a pellet by using KBr pellet technique. The prepared samples were subjected to FT-IR analysis and the spectra were recorded in the region $4000-400\text{ cm}^{-1}$. Vibrational assignment modes were made based on the spectral results and the shifts in frequencies were identified.

2. Experimental details

Sample preparation

Seeds of Piper nigrum, Carica papaya, lantana camara where obtained naturally from plant. They are allowed to dry for one month in room temperature, sample of Piper nigrum, Carica papaya, lantana camara where powdered, this samples which weight 0.2g each is used for FTIR sample analysis to obtain spectra. To find the Adulteration of Piper nigrum with two adulterant, namely Carica papaya, and lantana camara they are mixed in equal proportions. The sample of Piper nigrum and Carica papaya which is mixed in the ratio of 0.1 g each and the sample of Piper nigrum and lantana camara is also mixed in the ratio of 0.1g each. IR 4.65site 18



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PREPARATION OF NICKEL OXIDE (NiO) NANOSTRUCTURED THIN FILMS BY SILAR TECHNIQUE

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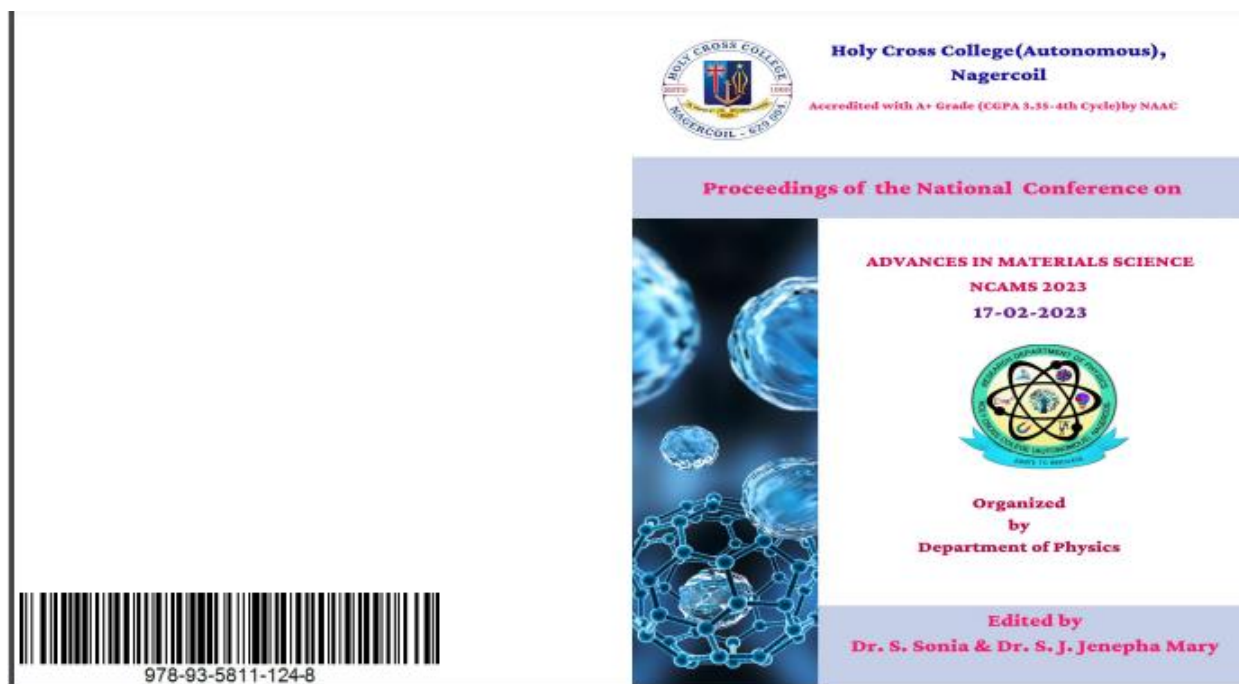
Abstract

The preparation of nanostructured undoped NiO thin films to an amorphous glass substrate via SILAR (successive ionic layer adsorption and reaction) technique. In the present work Nickel oxide thin films have been grown by successive ionic layer Adsorption and Reaction (SILAR) method on a glass substrate at room temperature followed by annealing at 400°C for 2 hours. The effect of annealing temperature on the structural and morphological properties was analyzed. Nickel oxide thin films were characterized by X-ray diffraction (XRD), Scanning Electron Microscopy (SEM), and Energy Dispersive X-ray (EDX) analyses. The crystal structure, surface properties, and growth mechanism of nickel oxide thin films were studied in detail.

Keywords: Thin film, Deposition, NiO, SILAR method.

1. Introduction

Nowadays thin film in science and technology plays an important role in microelectronics, communications, optoelectronics, integrated optics, and photovoltaic devices[1]. NiO thin films have a bandgap energy range of 3.5–4.0 eV and are p-type semiconductors. Numerous techniques were used to grow nickel oxide thin films. These techniques include sequential ionic layer adsorption and reaction (SILAR), vacuum evaporation, sputtering, chemical vapor deposition, electrodeposition process, pulsed laser deposition, spray pyrolysis, and chemical bath deposition (CBD). The SILAR method is a suitable method for synthesizing thin films since it is easy to use, affordable, and repeatable when compared to other approaches[2]. NiO thin films are desirable for applications such as UV photodetectors, gas sensors, light-emitting diode (LED) batteries, electrochromic windows, and solar cells due to the above



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INFLUENCE OF SHOCK WAVES ON STRUCTURAL, OPTICAL AND MORPHOLOGICAL PROPERTIES OF VANADIUM PENTOXIDE NANOPARTICLES

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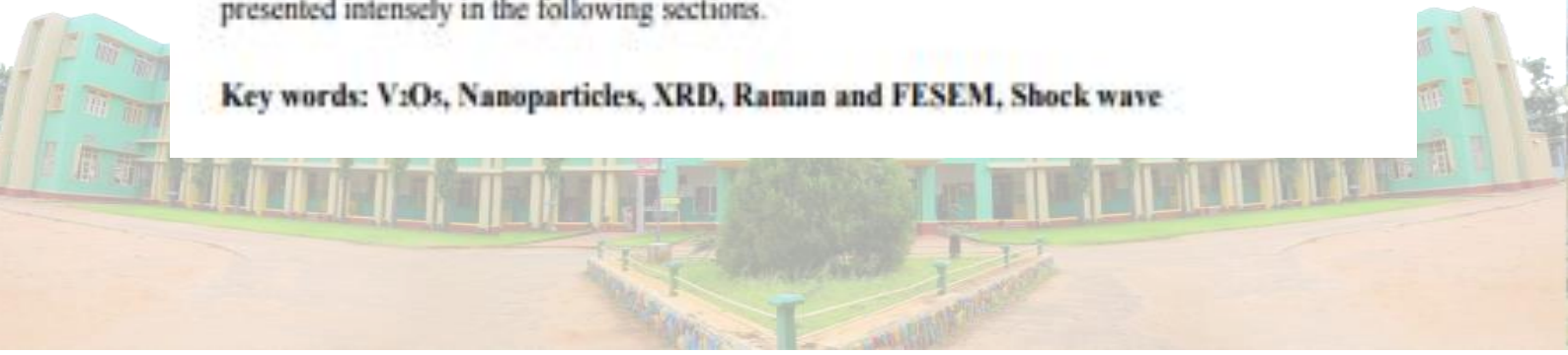
Corresponding Author: Dr.V. Shally,

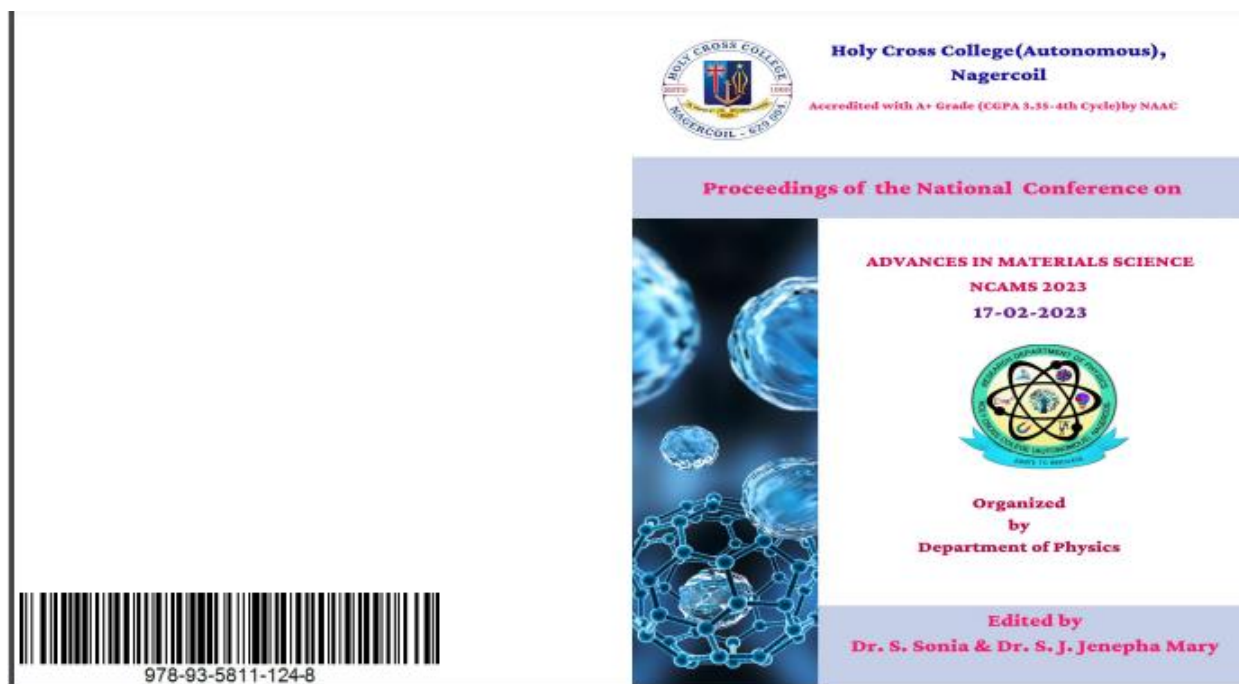
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Abstract

The present work is focused on stability of shock wave-exposed vanadium pentoxide(V_2O_5) nanoparticles. V_2O_5 nanoparticles are synthesized by hydrothermal method and exposed to 200 shock pulses having Mach number 2.4. The table top semiautomatic pressure-driven shock tube is used to generate shock waves for the present experiment. The influence of shock waves on the treated and untreated V_2O_5 nanoparticles are explored and characterized by a variety of properties like structural, optical and morphological details observed using powder XRD, RAMAN and FESEM, respectively. The powder XRD profile confirmed that there are no lattice defects or any deformation except negligible changes in grain size. FESEM images established that the shock wave-loaded V_2O_5 nanoparticles have good structural and morphological stability. The obtained results showed that V_2O_5 nanoparticles can be used in aerospace, nuclear reactors and high-pressure applications which undergo extreme conditions. The details are presented intensely in the following sections.

Key words: V_2O_5 , Nanoparticles, XRD, Raman and FESEM, Shock wave





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REVIEW ON EFFECT OF STRUCTURAL AND MORPHOLOGICAL PROPERTIES OF CeO₂ BASED NANOCOMPOSITES IN WASTEWATER TREATMENT APPLICATIONS

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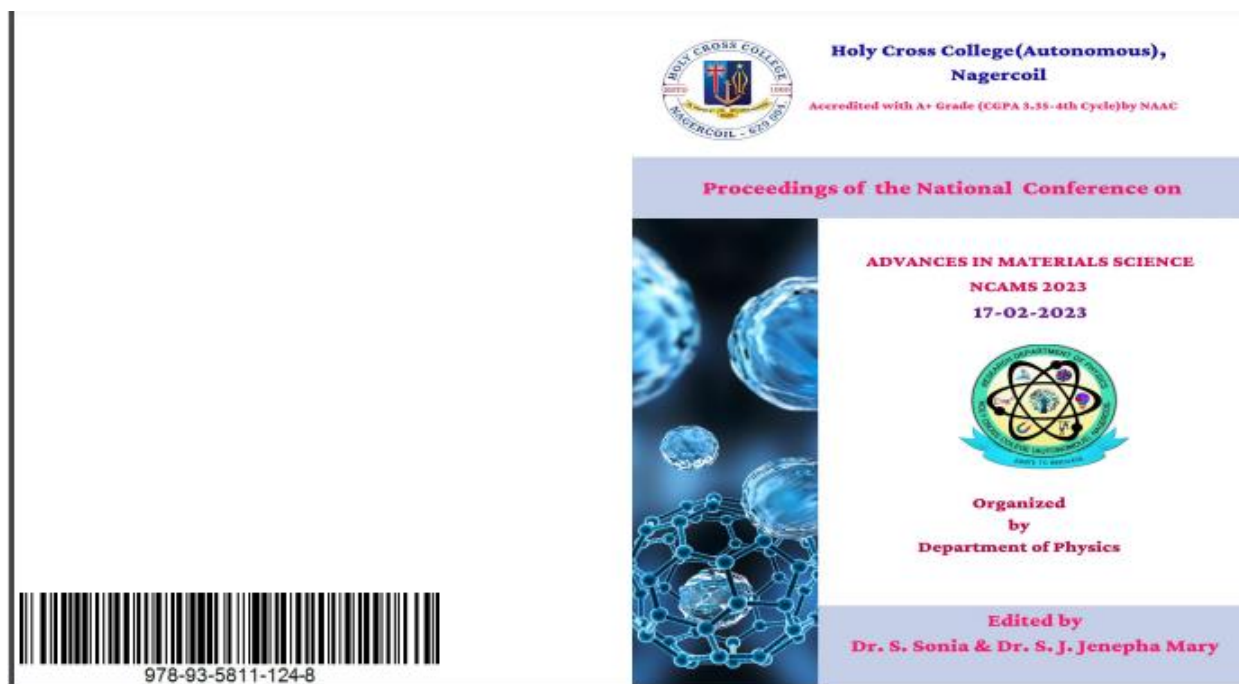
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ABSTRACT

In this review paper ,the structural and Morphological properties of CeO₂ based nanocomposites are analysed from literature for suitable usage in wastewater treatment





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**EVALUATION OF STRUCTURAL PROPERTIES OF BOTH PERMANGANATE
TREATED AND UNTREATED ACACIA PENNATA NATURAL FIBERS**

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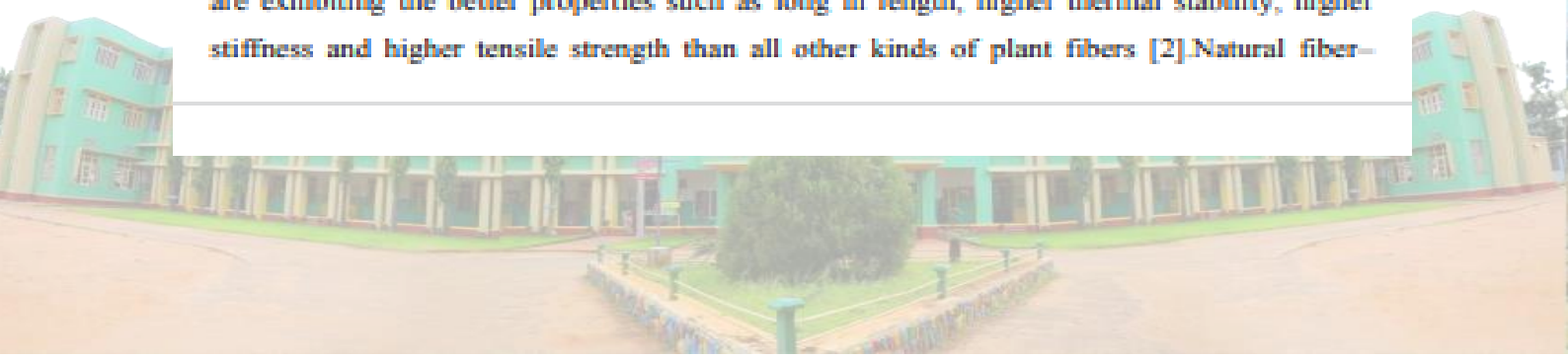
ABSTRACT

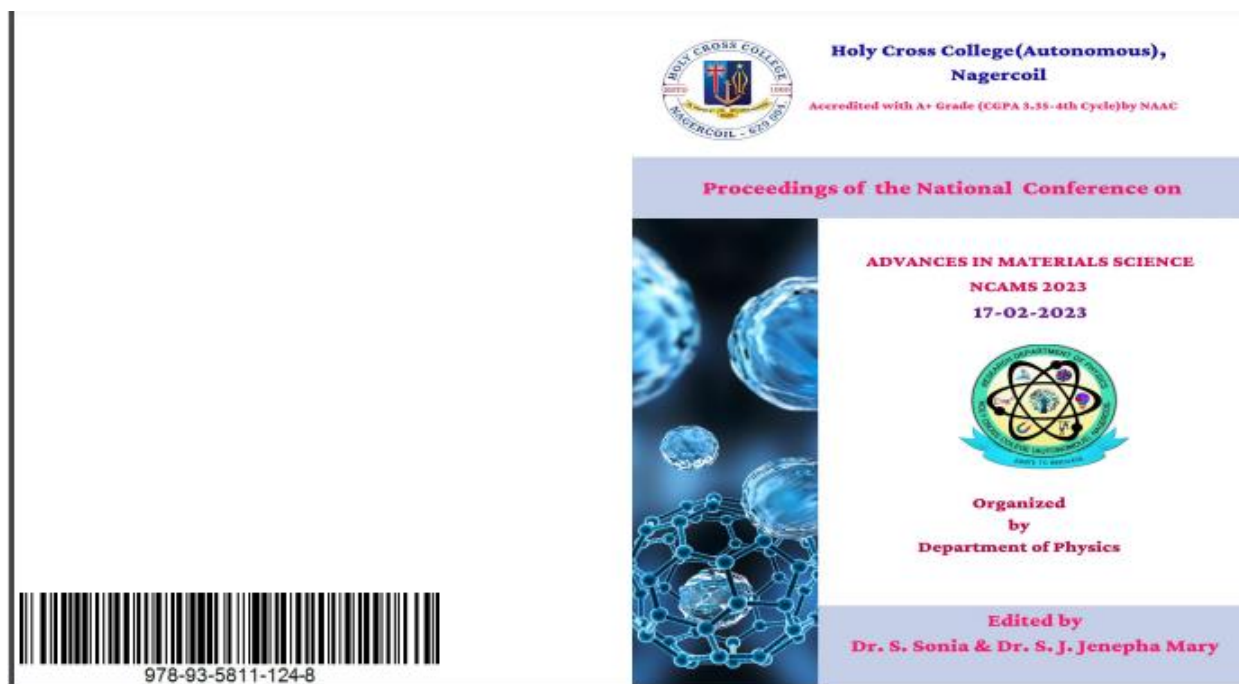
Natural fibre reinforced polymer composites are widely used in a variety of applications, including furniture, packaging, and building supplies. The goal of the current work is to access the structural characteristics of Acacia pennata natural fibres using techniques like powder X-ray diffraction, surface morphology, and Fourier transform infrared spectroscopy (FTIR). Natural fibres from Acacia pennata (AP) were given a chemical treatment to lessen their capacity to absorb moisture. To lessen moisture absorption, these fibres were chemically treated. Potassium permanganate was used after alkali pretreatment on Acacia pennata to create a more hydrophobic surface that would absorb less water and have better interfacial adhesion. Powder X-ray diffraction analysis was used to investigate the AP fiber's crystalline nature. Crystalline index of the untreated and alkali treated AP fiber is 46.52% and 54.65% respectively. Morphological studies showed that the surface roughness was improved after permanganate treatment. FTIR spectroscopic analysis were done and the results showed the evidence of positive reactions. The characterization results show that the APF is a better replacement material for synthetic fibers because of its significant morphological and functional properties.

Keywords: Acacia pennata fibers; Crystallinity; Morphology and FTIR analysis.

1. INTRODUCTION

Natural fibers are most favorable renewable bio-sources due to their easy availability, low cost, less weight, moderate strength, high specific modulus, easy processing, recycling, no toxic emissions to the environment, and flexibility to chemical modification [1]. Bark fibers are exhibiting the better properties such as long in length, higher thermal stability, higher stiffness and higher tensile strength than all other kinds of plant fibers [2]. Natural fiber-





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ELECTROCHEMICAL ANALYSIS OF CARBON SYNTHESIZED FROM BIOPOLYMER CHITOSAN

N. Annlin Bezy^a, S. Jasvy^b, K. Francy^c, S. Sebastianamma^d A. Lesly Fathima^{d*}

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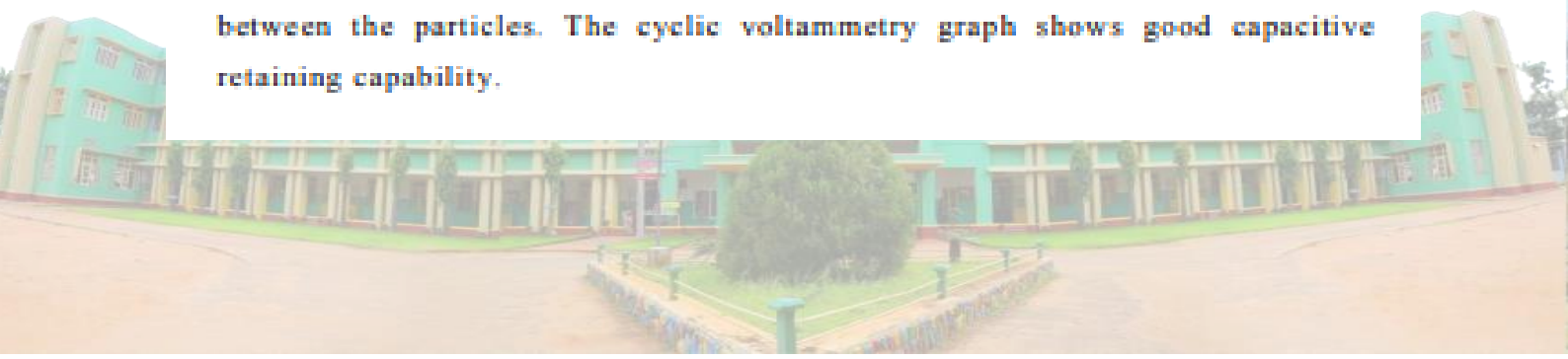
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Affiliation to Manonmanium Sundaramar University, Tirunelveli.

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Abstract


Carbon is commonly used as electrode material in batteries due to high-performance behavior like a supercapacitor. Globally biomass-derived carbon is in demand by its low cost and effectiveness. This article is about the shrimp shell-derived chitosan considered a source of carbonization. Chitosan is a biocompatible, biodegradable biopolymer with huge application, hence considered here as a material for carbon synthesis. The XRD of carbon obtained is crystalline for temperatures 450°C and 500°C. The width of the peak is varied due to the gap between the particles. The cyclic voltammetry graph shows good capacitive retaining capability.






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STRUCTURAL AND OPTICAL PROPERTIES OF LITHIUM NITRATE DOPED GLYCINE SODIUM NITRATE

A. Abisha Mary, J.M. Jiji, M. Sahaya Privinsha, P. Sahaya Jaslin Shriv, Jasvy,
S, Merisha, M. Virgin Jeba. S, Sebastiammal. S, Lesly Fathima. A*

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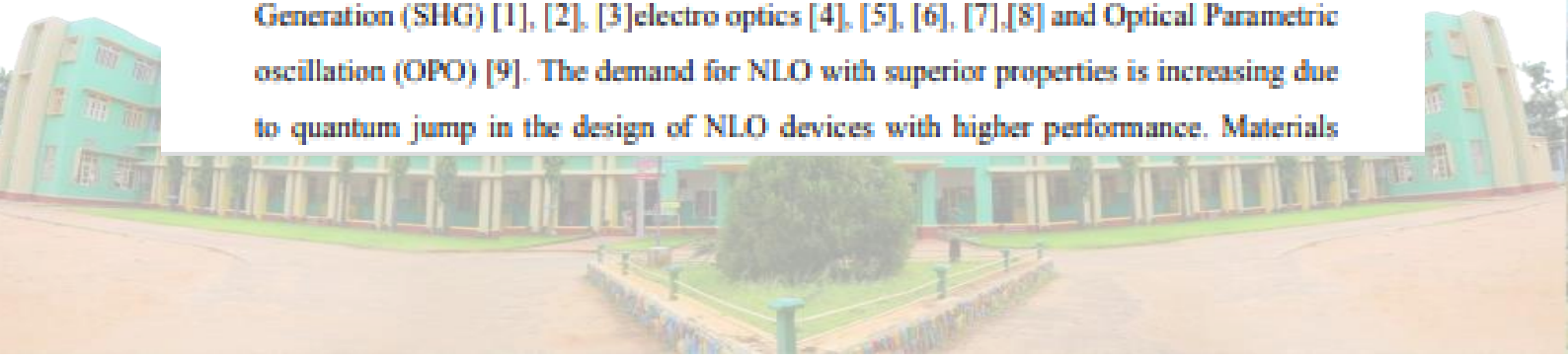
Abstract

Glycine, an amino acid, is significant in the realm of Nonlinear optics and in applications involving optics and electricity. Single crystals of pure and LiNO_3 doped Glycine Sodium Nitrate were grown by the method of slow evaporation at room temperature. The harvested crystals were subjected to spectroscopic studies like FTIR for functional group confirmation and the absorption and transmittance efficiency was measured with the help of UV-Vis-NIR. The crystalline nature and the cell parameters of the compound were measured with XRD. The study reveals the optical properties and NLO efficiency of pure and doped GSN crystals.

Keywords: GSN, semi organic crystals, Nonlinear optics, Slow evaporation,

1. Introduction

Crystals are the pillars of modern technology. They are the prime candidates for the fabrications of optoelectronic devices, high efficiency solar cells, fiber-optic communication and other electronic industries. Materials with large nonlinearities, short transparency cut-off wavelength and stable physicochemical properties are needed for these applications. Some of the applications of NLO include Second Harmonic Generation (SHG) [1], [2], [3] electro optics [4], [5], [6], [7],[8] and Optical Parametric oscillation (OPO) [9]. The demand for NLO with superior properties is increasing due to quantum jump in the design of NLO devices with higher performance. Materials

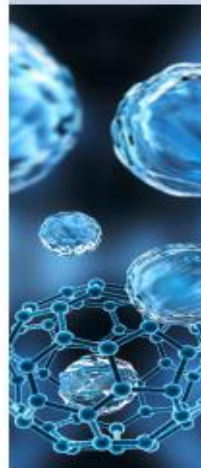




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**INHIBITORY EFFECT OF MORINGA LEAF EXTRACT ON
URINARY STONE CRYSTAL**

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Abstract

Kidney stone is a type of crystal solidification formed generally within the kidney. This is an increasing urological disorder of human health affecting people all over the world. One of the types of kidney stone is Calcium Hydrogen Phosphate Dihydrate (CHPD). The inhibitory effect of Moringa leaves extract on crystallization of Calcium Hydrogen Phosphate Dihydrate (CHPD) crystal type kidney stone has been analyzed by single diffusion gel growth method. Moringa leaves extract has been used as inhibitor for the crystallization of Calcium Hydrogen Phosphate Dihydrate (CHPD) crystal. Studies like EDAX, FTIR and SEM analysis are done with and without Moringa leaves extract have confirmed the inhibitory strength. The number of crystals is grown with various concentration of moringa leaves extract. The FTIR studies analyzed the presence of water of crystallization, P=O bond, O-H bond and also slight changes in peak is due to phytochemicals present in moringa leaves extract. EDAX analysis confirmed the required elements. SEM analysis confirmed the plate like structure of CHPD crystal and also confirmed the surface bond water of CHPD crystal may form bond with bioactive compound of moringa leaves extract, which weakens the ionic character and leads to structural alteration of the treated crystal into smaller units.


1. Introduction

Urolithiasis (or) kidney stone is the wide problem facing by various people all over the world for several years. The mineral deposits in the kidney enclose of various form of calcium salts such as calcium oxalate and calcium phosphate [1]. The brushite (CHPD) is one of the forms




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GROWTH AND CHARACTERIZATION OF PURE AND CADMIUM NITRATE DOPED GSN SINGLE CRYSTALS

Abarna Devi. S. S., Akshalyn Ramya. V., Hency Janet. H., Sifana. H., Jasvy. S.

Sebastianm S., Lesly Fathima. A.*

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*Email: leslysar@gmail.com

Abstract

Glycine, an amino acid, is significant in the realm of nonlinear optics and in applications involving optics and electricity. Good quality crystals of glycine sodium nitrate both in pure form and 1mol% Cd (NO₃)₂ doped form are obtained by the slow evaporation method. The grown crystals were subjected to studies such as FTIR and UV-Vis-NIR. The functional groups present in the grown crystal was found by the FTIR spectra and the absorbance and transmittance efficiency was measured by UV-Vis-NIR spectra. The crystalline nature was identified by XRD. The study reveals the optical and NLO properties of pure and doped GSN crystals.

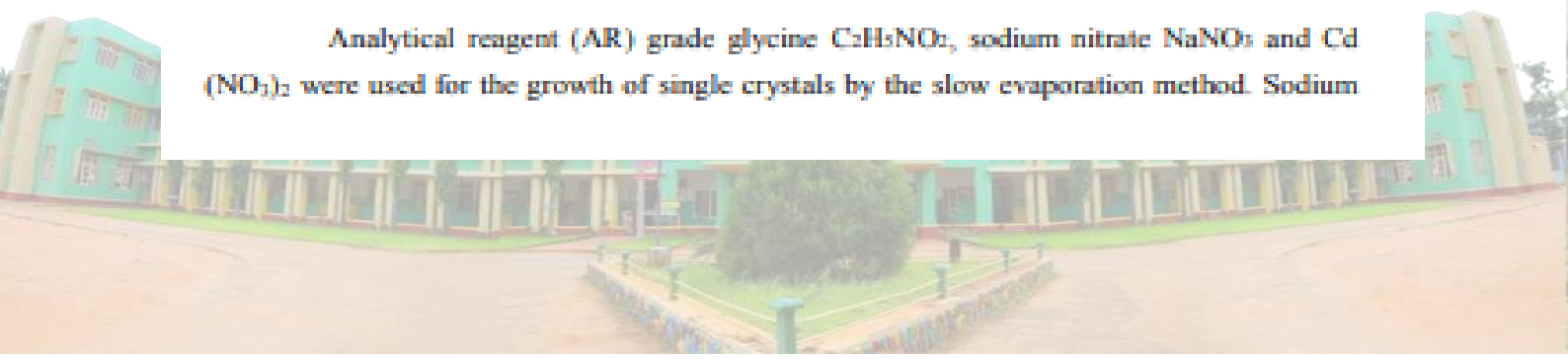
Keywords: GSN, semi organic crystals, non-linear optics, slow evaporation.


1. Introduction

Non-linear optical (NLO) materials play a major role in optics [1], electro optical modulators, high density optical memories, colour displays, signal processing devices involving the generation of new frequencies [2], signal amplifications, emissions or oscillation etc. Non-linear optical materials play an important role in the field of fibre optic communications. NLO materials aid in changing the frequency of incident monochromatic light and in the conversion of low frequency light to high frequency. The significant nonlinear optical materials are generally in the form of single crystals and must meet a wide variety of material requirements for optical use.

2. Materials and Methods


Analytical reagent (AR) grade glycine C₂H₅NO₂, sodium nitrate NaNO₃ and Cd (NO₃)₂ were used for the growth of single crystals by the slow evaporation method. Sodium






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**CRITICAL REVIEW ON METAL OXIDE DERIVED FROM METAL ORGANIC
 FRAMEWORK FOR ELECTROCHEMICAL APPLICATIONS**

Abisha P^a, Jinitha C G^b, Sonia S^{a*}

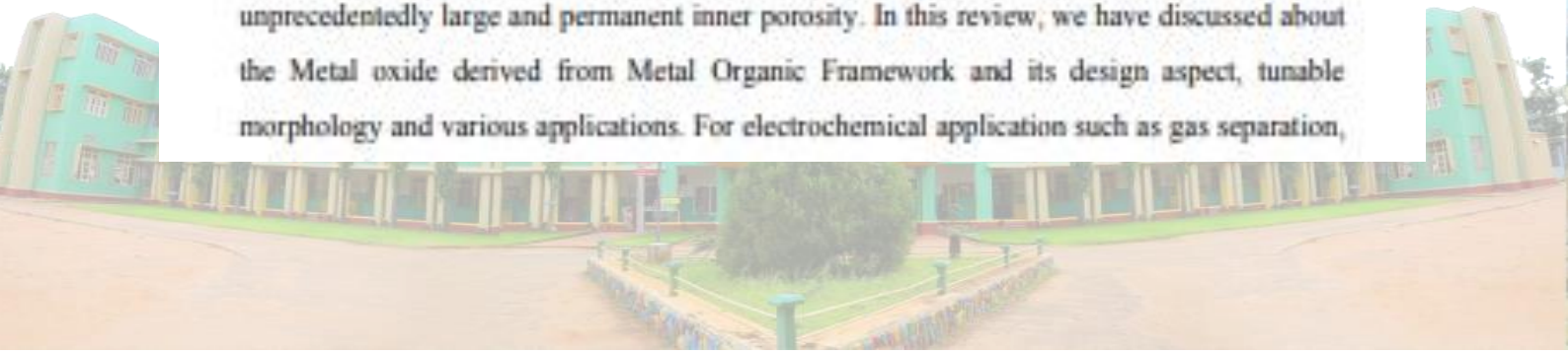
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Abstract


Metal organic frameworks (MOFs), are fascinating class of crystalline hybrid materials, which offers a unique chemical versatility combined with a designable framework and an unprecedentedly large and permanent inner porosity. In this review, we have discussed about the Metal oxide derived from Metal Organic Framework and its design aspect, tunable morphology and various applications. For electrochemical application such as gas separation,






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MORPHOLOGICAL, ELEMENTAL AND CHEMICAL ANALYSIS OF RAW AND PERMANGANATE TREATED ZEA MAYS ROOT FIBRES

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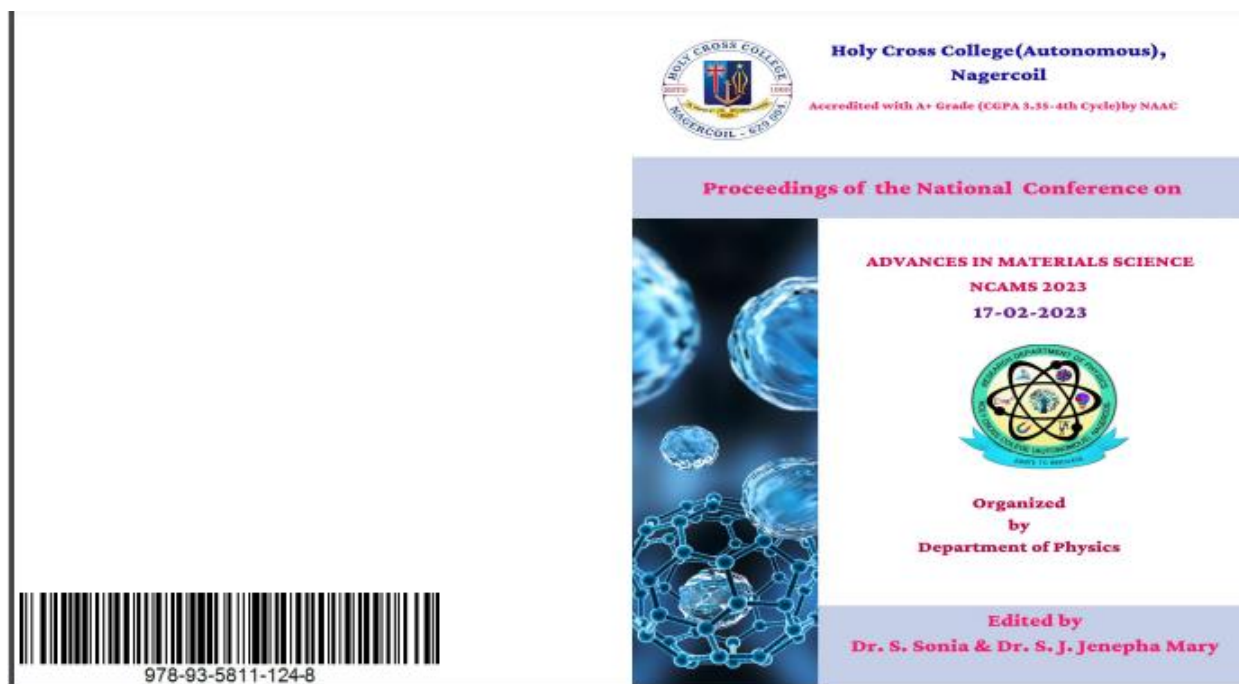
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Abstract

Because they are crucial in the creation of cutting-edge bio-based products, natural fibres have had a tremendous impact on human science and cultural history. The uses of these materials are therefore growing as a result of their financial and environmental benefits. The use of these plant fibre reinforced composites has grown due to their ease of accessibility, light weight, low maintenance requirements, and eco-friendly nature. Inorder to produce the most



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MOLECULAR GEOMETRY AND ELECTRONIC STRUCTURE OF E)-N,N-DIETHYL-2-(5-(3-HYDROXY-4-METHOXYBENZYLIDENE)-2,4-DIOXOTHIAZOLIDIN-3-YL) ACETAMIDE USING DFT METHOD

Arubiya J^a, V. Shally^b, S. J. Jenepha Mary^c, J. Deva Anban^{*}

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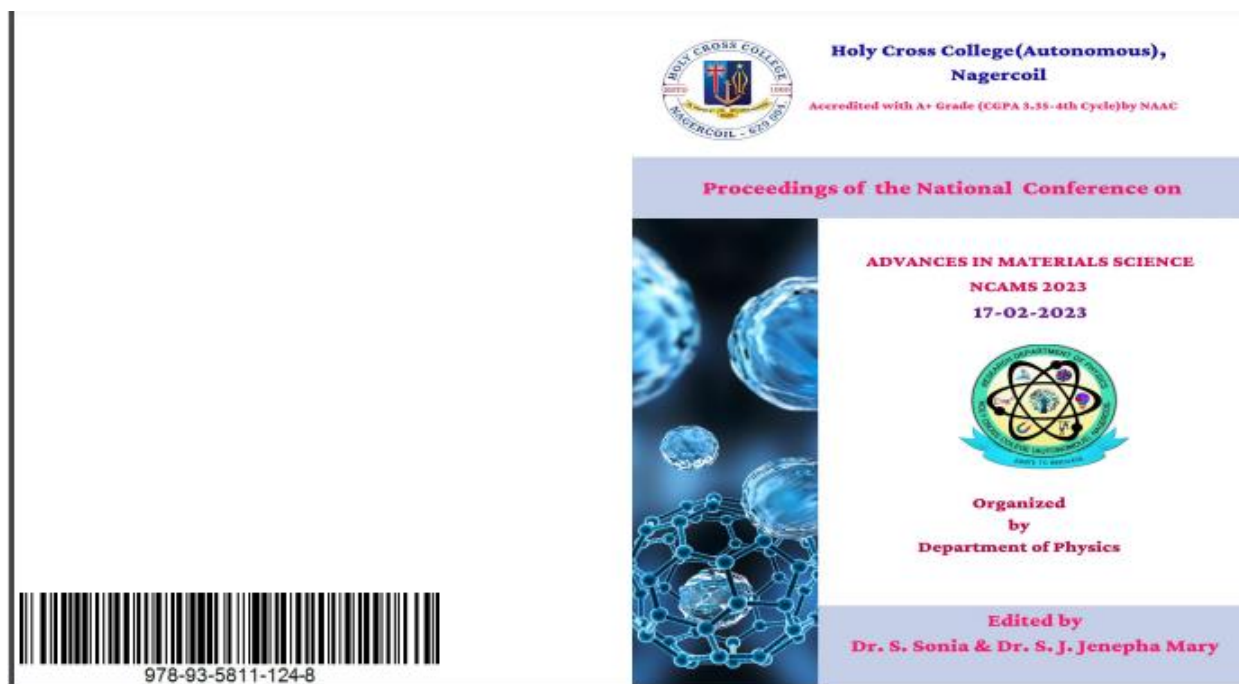
Abstract

E)-N,N-diethyl-2-(5-(3-hydroxy-4-methoxybenzylidene)-2,4-dioxothiazolidin-3-yl) acetamide (DMDA) is a molecule that has shown promise as a potential treatment for diabetes due to its ability to inhibit aldose reductase. In order to better understand the molecular structure and interactions of DMDA, density functional theory (DFT) was employed using the B3LYP method and a 6-311 + G (d, p) basis set. The calculated molecular geometry was compared with experimental values, and a good agreement was found between the two. To gain insight into the interactions of DMDA with enzymes, as well as the contribution of charge and electronic exchange interactions to its potency and selectivity, a Natural Bond Orbital (NBO) analysis was performed. The NBO analysis showed that a significant stabilization energy of 65.91 kcal/mol was induced by the charge transfer from the lone pair nitrogen to the antibonding orbital ($N \rightarrow \pi^*(C - O)$). This indicates that the nitrogen atom plays an important role in the interactions of DMDA with enzymes.

Keywords: Molecular geometry, NBO

1. Introduction

Diabetes mellitus has become more prevalent globally in recent decades, mainly due to significant shifts in lifestyle habits. Thiazole and its derivatives have more pharmaceutical properties with minimal side effects, making them useful in developing treatments for diabetes and other health issues [1,2]. Aldose reductase (ALR2) is a key enzyme



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A REVIEW ON CdO BASED NANOCOMPOSITES: EFFECT OF STRUCTURAL AND MORPHOLOGICAL PROPERTIES ON DEGRADATION OF PHARMACEUTICAL CONTAMINANTS**J. Jenima, M. Priya Dharshini*, V. Shally, Sr. Gerardin Jayam**

Research Department of Physics, Holy Cross College (Autonomous), Nagercoil, (Affiliated to Manonmaniam Sundaranar University, Tirunelveli) Tamil Nadu, India.

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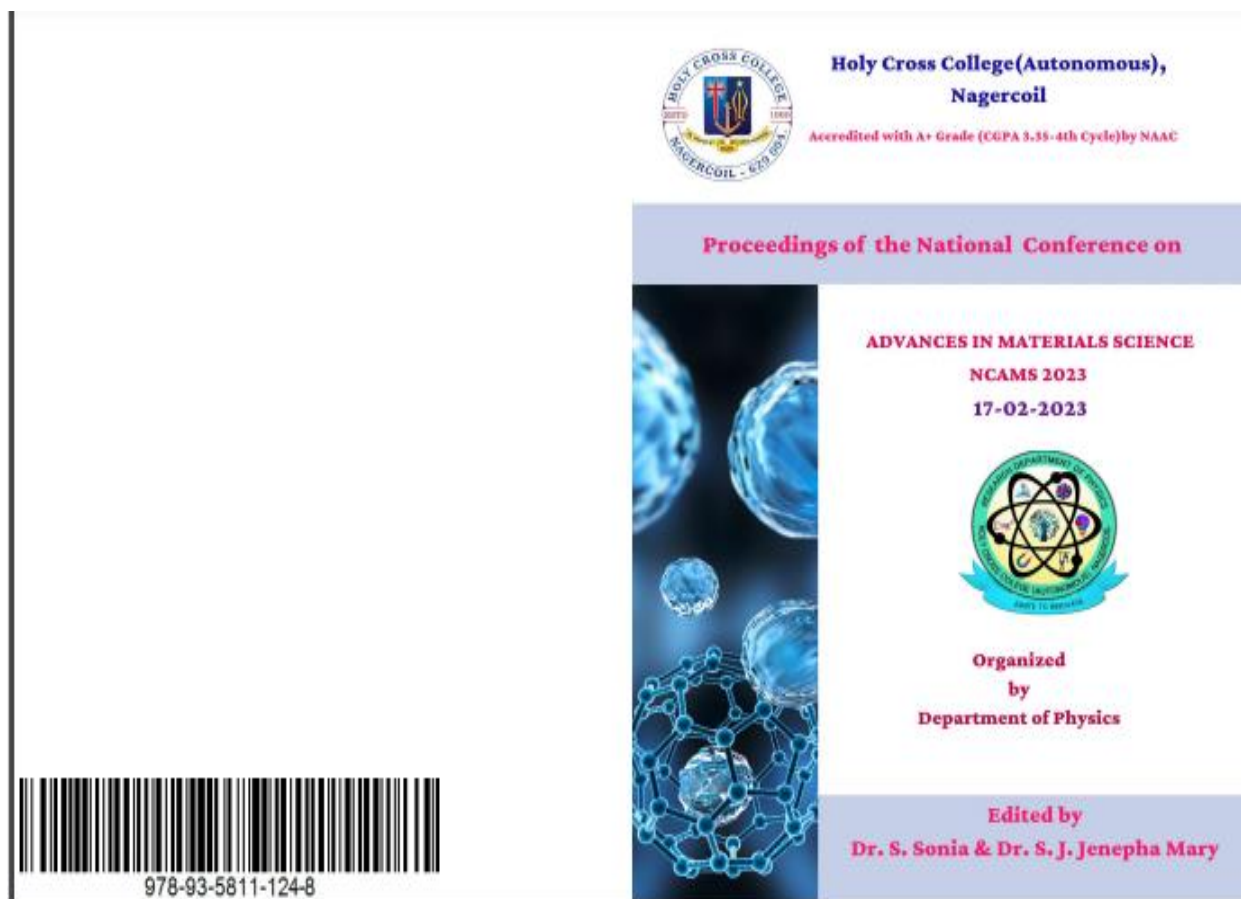
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Abstract

CdO based nanocomposites are useful for a wide range of applications such as solar cells, photodiodes, transparent electrodes and sensors. Literature survey revealed that ternary oxide NiO-CdO-ZnO nanocomposites were synthesized along with pure NiO, CdO and ZnO by homogeneous co-precipitation method. The PXRD pattern confirmed the formation of nanocomposites with NiO (cubic)-CdO (cubic)-ZnO (hexagonal). SEM images of the above reported nanocomposites showed monodispersed nanoparticles with roughly spherical morphology and a relatively narrow size distribution. EDX described that Zn had a higher concentration than Ni and Cd. CdO-CuO nanocomposites that were generated by a microwave-assisted process was reported in this result. SEM images revealed the spherical morphology of the particles of the nanocomposites. EDAX revealed the presence of Cd (26.22%), Cu (16.98%), and O (56.80%). A facile approach was demonstrated by the scientists for the preparation of CdO-NiO-ZnO mixed metal oxide nanocomposites using microwave assisted synthesis. PXRD exhibited CdO (cubic), NiO (cubic), ZnO (hexagonal) structure with an average crystallite size of 37, 23 and 20 nm respectively. SEM and TEM images revealed the morphology as a sheet like structure. Because of the unique structure and morphology obtained in CdO based nanocomposites these materials are found to be suitable candidates for effective degradation of pharmaceutical contaminants.

Keywords:

Cadmium oxide, Nanocomposites, Degradation, Pharmaceutical contaminants



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CHEMICAL TREATMENTS ON NATURAL FIBERS FOR POLYMERIC APPLICATIONS – A REVIEW

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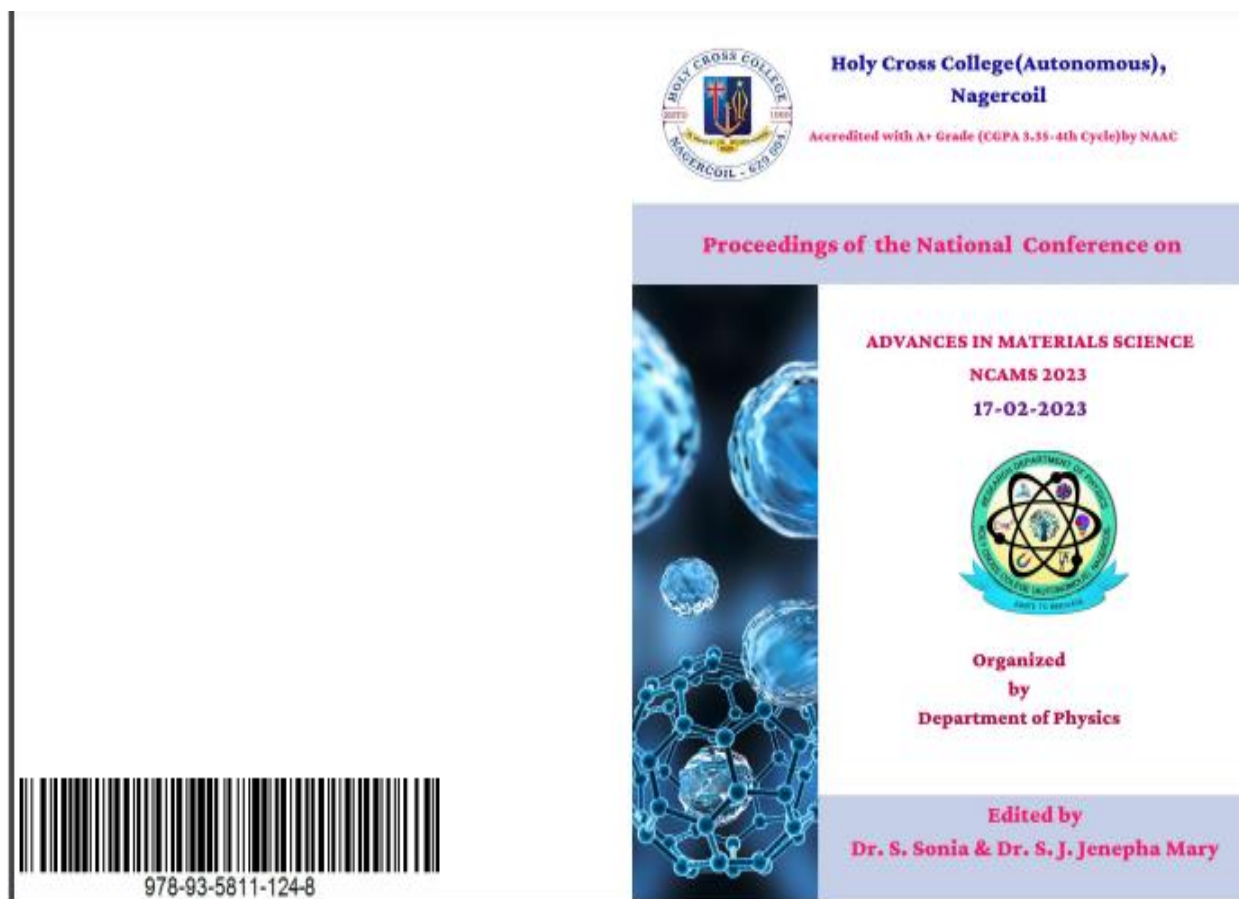
Abstract

The creation of green products using renewable materials has been a key thing of discussion. Researchers are paying more attention to bio-fibers because of its inherent sustainability, biodegradability, renewability, and recyclable qualities. The complete characteristics of natural fibers are influenced by the growing technique, environmental factors, extraction technique, treating process and its behaviour with the matrix phase. Plant fibres can be separated via mechanical decortication, water retting, or dew retting. By using the right chemical treatment procedures, the properties of natural fibre reinforced composites could be improved. This review of the literature suggests a thorough analysis of the chemical processing, and uses of natural fibre composites for a sustainable environment. Various properties of chemically treated fibers for composite applications are highlighted.

Keywords: green fibers, chemical treatments, sustainability, composite material

I. Introduction





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CHITOSAN PRODUCTION FROM SQUID GLADIUS – A POTENTIAL SOLUTION FOR WATER TREATMENT AND CHOLESTEROL CONTROL.

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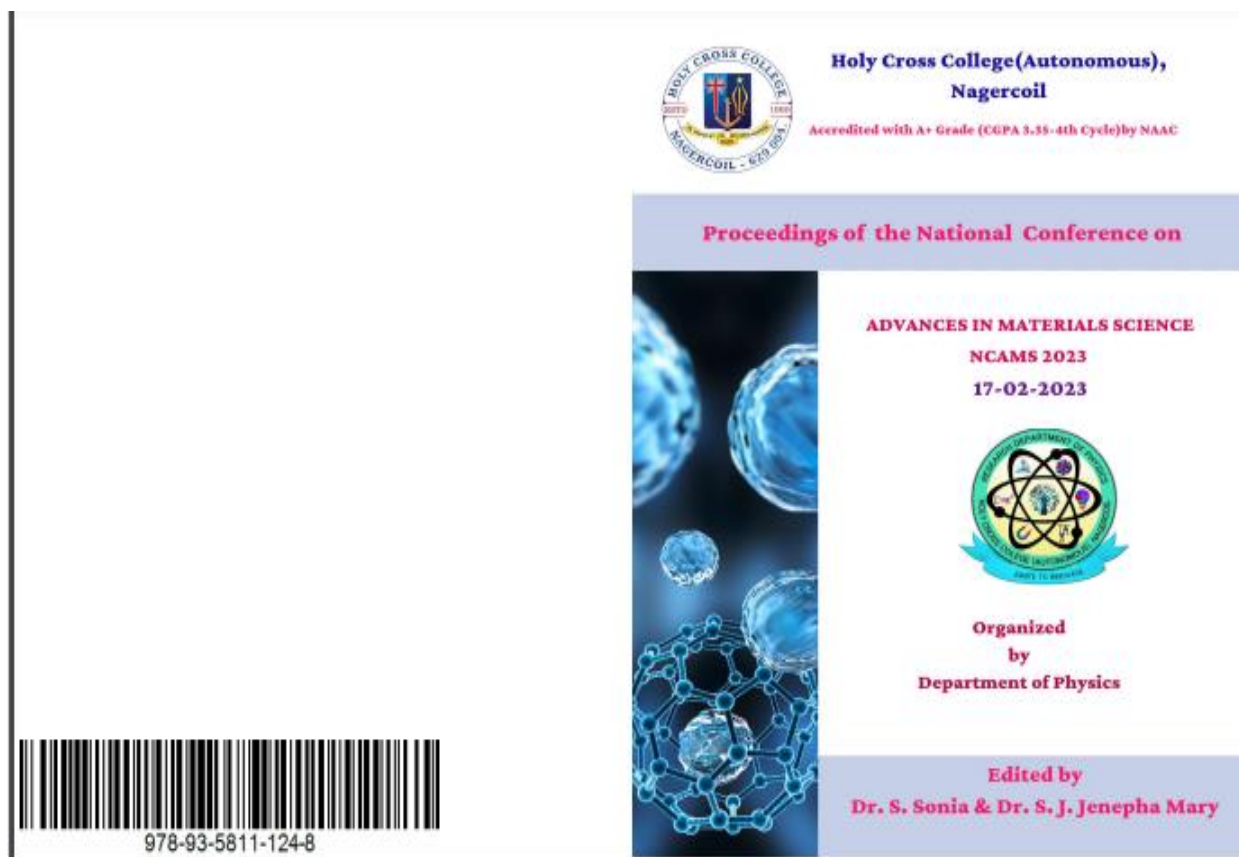
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Abstract

Chitosan is a natural biopolymer derived from the de-acetylation of chitin, abundantly found in most marine crustaceans including squids. Chitosan has a wide range of applications, including water treatment, biomedicine, wound healing, food preservation and drug delivery. Chitosan is well known for its effective binding capacity on certain materials, particularly those with a negative charge. Chitosan's binding capacity is a major attributing factor in some of its applications such as water treatment and nutritional supplements. In this study chitosan is synthesized from the squid remnants of local squid species and the resulting material is subjected to different characteristic studies and binding capacity testing. The material exhibits



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**A REVIEW ON ZnO BASED NANOCOMPOSITES: STRUCTURAL AND
MORPHOLOGICAL PROPERTIES FOR PHOTOCATALYTIC
APPLICATIONS**

J.Jasma Shalu, M. Priya Dharshini^{*}, V.Shally, Sr. Gerardin Jayam

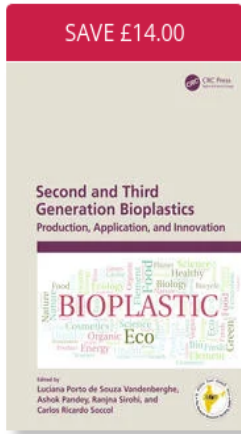
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Abstract

In this review, the noble metal–ZnO nanocomposites with various structural and morphological properties for photocatalytic applications were discussed. ZnO-V₂O₅ nanocomposites prepared via simple thermal decomposition method were reported in literature. The formation of orthorhombic structured V₂O₅ and hexagonal structured ZnO was confirmed by powder X-ray diffraction analysis. HR-SEM result revealed the nanorod formation of prepared V₂O₅/ZnO composites. From EDX analysis, it was confirmed that the prepared nanocomposites are composed of vanadium, zinc and oxygen only. Literature survey showed that ZnO-Yb₂O₃-Pr₂O₃ heterostructured nanocomposites were synthesized by the co-precipitation technique, and its application as an efficient antibacterial agent and photocatalyst were reported. The grown samples were characterized by PXRD, SEM to explore the structural, optical, electrical, and morphological properties. The XRD pattern revealed the presence of diffraction peaks related to ZnO (hexagonal), Yb₂O₃ (cubic) and Pr₂O₃ (hexagonal) in the nanocomposites. The photocatalytic activity of the ZnO-Yb₂O₃-Pr₂O₃ nanocomposites were carried out for the degradation of MB dye under sunlight irradiation, revealed 99.8% degradation in 60 min. ZnO-CdO-CuO nanocomposite along with pristine ZnO, CdO, and CuO nanoparticles were synthesized by the facile co-precipitation method was reported in the literature. The PXRD pattern exhibited the diffraction peaks of ZnO (hexagonal), CdO (cubic) and CuO (monoclinic) with ZnO, CdO, and CuO phases 65%, 16%, and 19%, respectively. The SEM images revealed agglomerated rod-shaped morphology and the elemental analysis



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 Production, Application, and Innovation**

Edited By Luciana Porto de Souza Vandenberghe, Ashok Pandey, Ranjna Sirohi, Carlos Ricardo Soccol
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Second- and Third-Generation Sources for Bioplastics

Production and Innovations in Applications

By *Jeyaprakash Dharmaraja, Retnam Krishna Priya, Sutha*

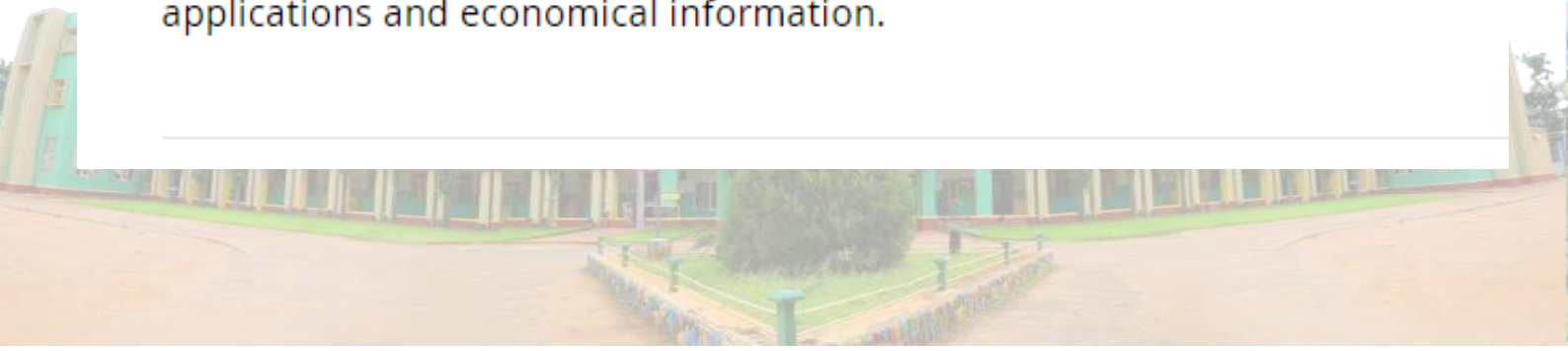
Shobana, Sundaram Arvindnarayan, L. Bartolucci, E. Maina, P. Mele, V.

Mulone, Gopalakrishnan Kumar

Abstract ^

Recently, there has been a growing interest to fabricate both plant- and algae-derived bioplastic materials, owing to the exhaustion of petrochemically based stocks and critical environmental issues. Scientists are continuously trying to reach those biopolymeric materials, originating them from either edible or non-edible bio-based renewable resources. The interest in making green technologies focuses on the production of sustainable bioplastics. This effort is for the development of entirely biodegradable bioplastics from low-density waste biomass materials, which are extensively available, and do not harm both the environment and living beings. The major advantages related to their environmentally friendly nature lie in the fact that they are completely decomposable and sustainable. Moreover, the decomposition of the biomass materials in the soil efficiently nourishes with minerals and carbon sources, calcium, protein, and phosphorus to the plants. Those biomass materials contain large amounts of organic compounds, mainly cellulose, hemicelluloses, lignin, and other polysaccharides.

This chapter encompasses briefly different second- and third-generation bioplastics derived from both 2G and 3G biomass materials, their production through suitable pathways, characteristics, innovations, applications and economical information.





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Functionalized Nanomaterials Based Supercapacitor

C. G. Jinitha · S. Sonla

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Abstract

In this chapter, we will discuss about polymer nanocomposites and the development this field has made over the years. We will also discuss two major applications of polymer nanocomposites which are water treatment and food packaging. Since the diverse uses of supercapacitors are attracting the attention of numerous researchers, the demand for flexible power sources that are both versatile and convenient is growing. The key features of the present chapter are:

- Examines the most current advances in supercapacitors, and also different types of polymers.
- Describes the functionalization of conducting polymers.
- Discusses the types of conducting polymers used in supercapacitor applications.
- Discusses the most significant applications of polymer nanocomposites.

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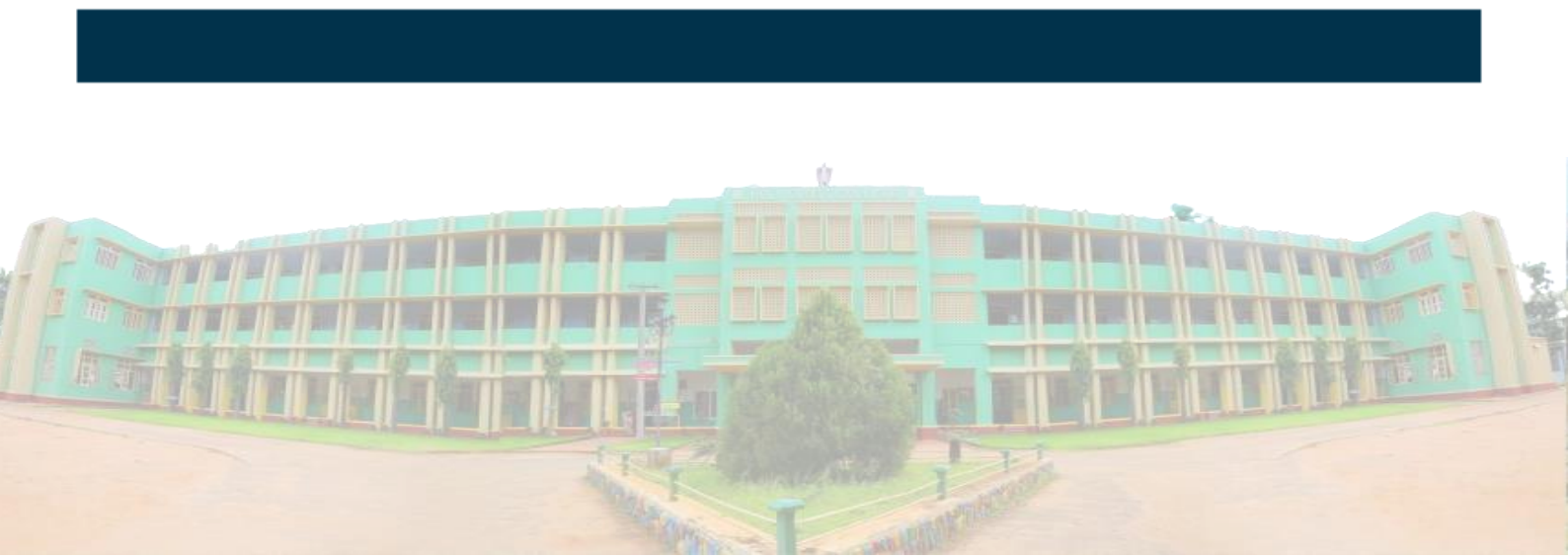
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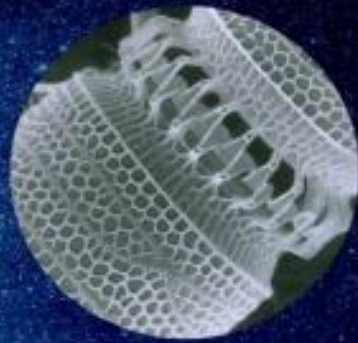


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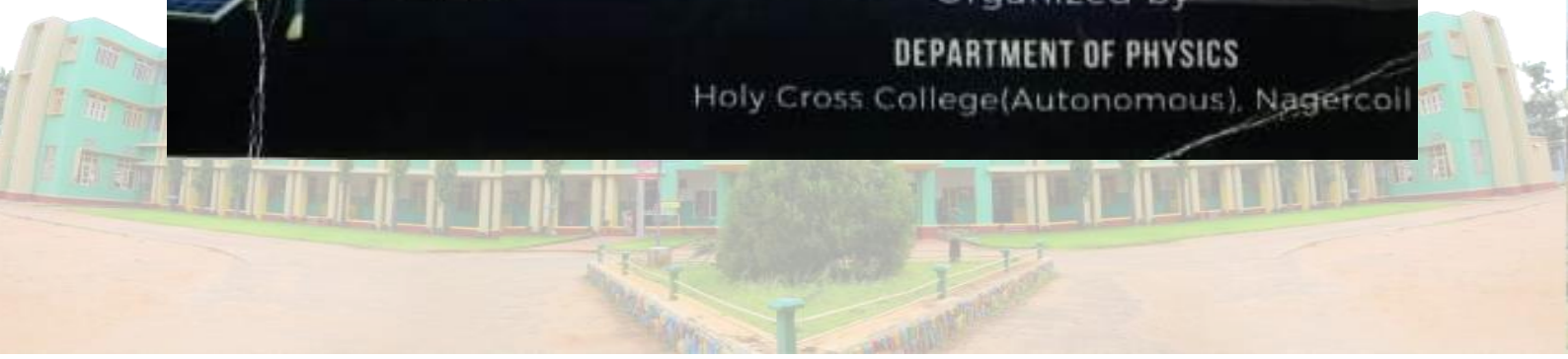
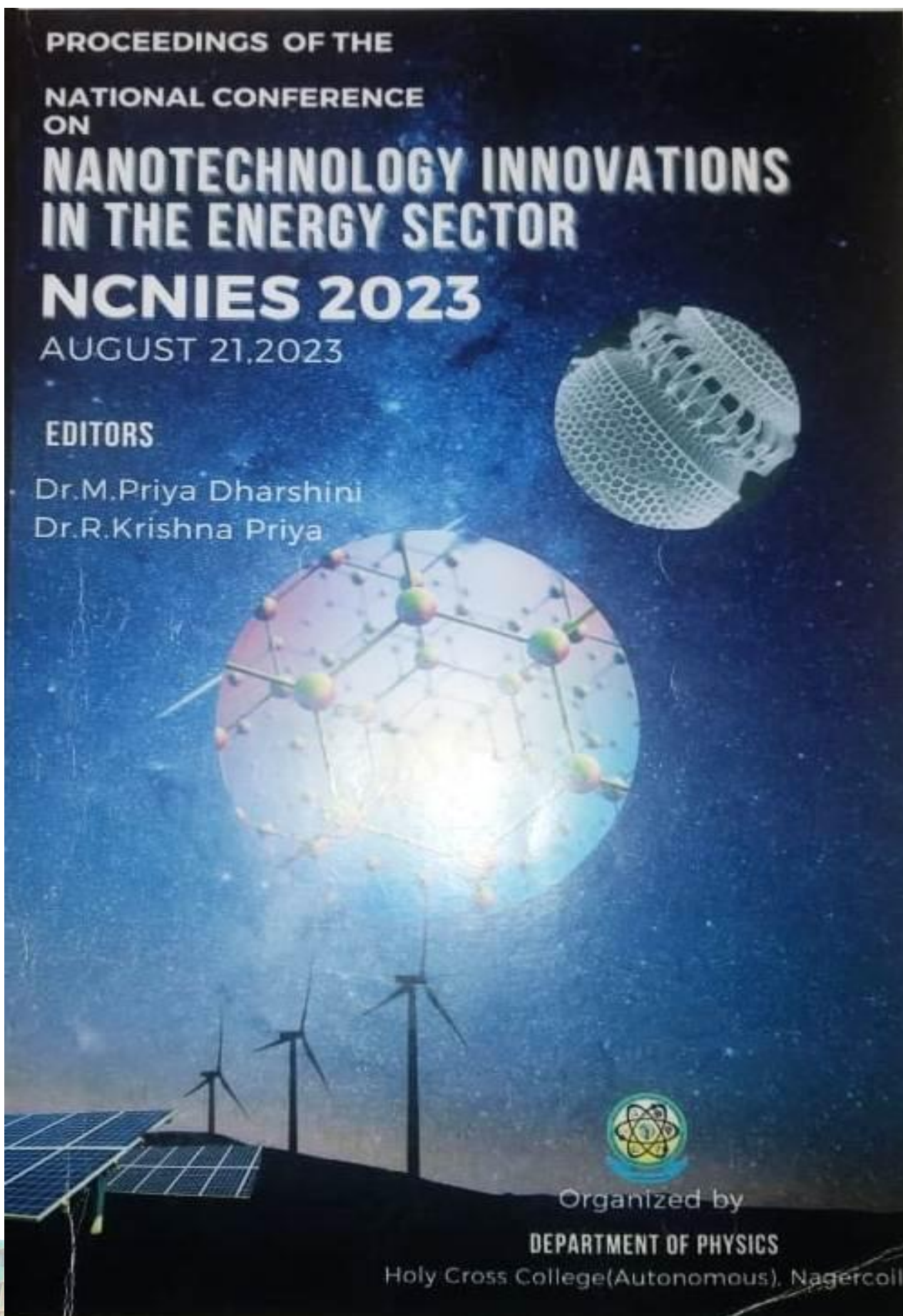


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SYNTHESIS OF HYDROXYAPATITE/CALCIUM OXIDE BIOCOMPOSITE FOR MULTIFUNCTIONAL APPLICATIONS

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ABSTRACT

Hydroxyapatite is an excellent biocompatible material especially used in bone tissue engineering due to its similar chemical structure with natural bone. Likewise, Calcium Oxide is an excellent biomaterial, prepared from eggshells containing 99% of calcium carbonate which is disposed as wastage. Hydroxyapatite and calcium oxide separately has a bioactive property, mechanical strength, and toughness. The properties of these materials can be improved by preparing them as composites. The present work deals with the preparation of Hydroxyapatite/Calcium Oxide bio-composites by ultrasonication method. This material could be used in biomedical applications and in waste water treatments because of its non-toxicity and environmental properties since they are made from natural sources.

Keywords: Hydroxyapatite, Bio-composite, Biocompatible

INTRODUCTION

In our modern world, calcium phosphates serve a significant function as a component in food, medications, biomaterials, and surfactants. Hydroxyapatite is a type of Calcium Phosphates that shows high biocompatibility with hard tissues, osteo conductive qualities, and environmentally friendly properties. As a result of its resemblance to the inorganic component of bone and tooth mineral, hydroxyapatite has been recognized as a crucial implant material. It is extracted from various natural sources such as fish bones, mammalian bones, shell sources etc. [1]. Similarly, one of the most promising metal oxides, Calcium Oxide is inexpensive and simple to produce, making it useful as a catalyst in LEDs, a remediation agent for hazardous wastes, and a purifier of hot liquids. Egg-shells are primarily made of calcium carbonate (94–97%), with traces of protein and inorganic materials making up the remaining 3–6%. About 876,000 tons of egg-shell wastes are produced annually, and the majority of this waste is typically disposed of in landfills, resulting in high management costs. This significant amount of waste has a number of negative effects on the environment,

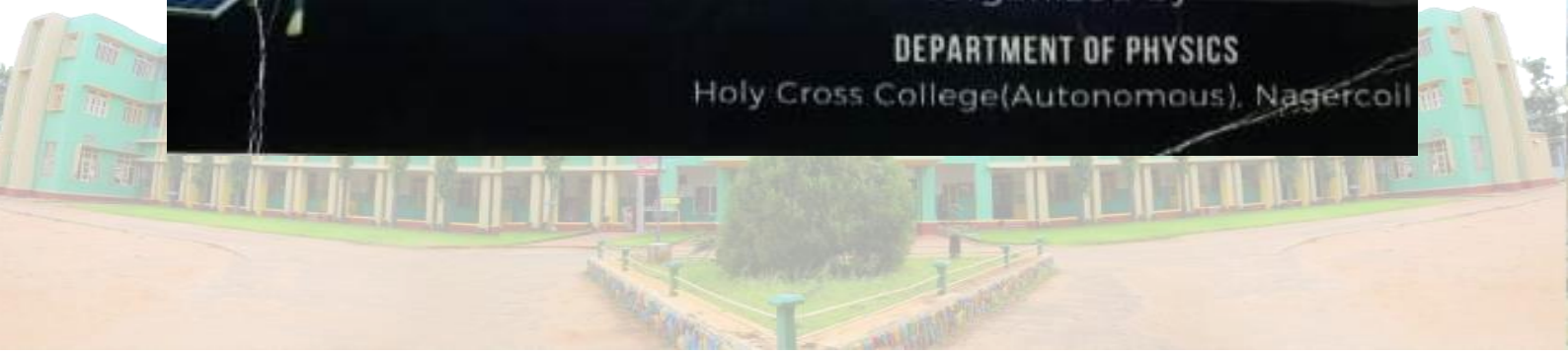
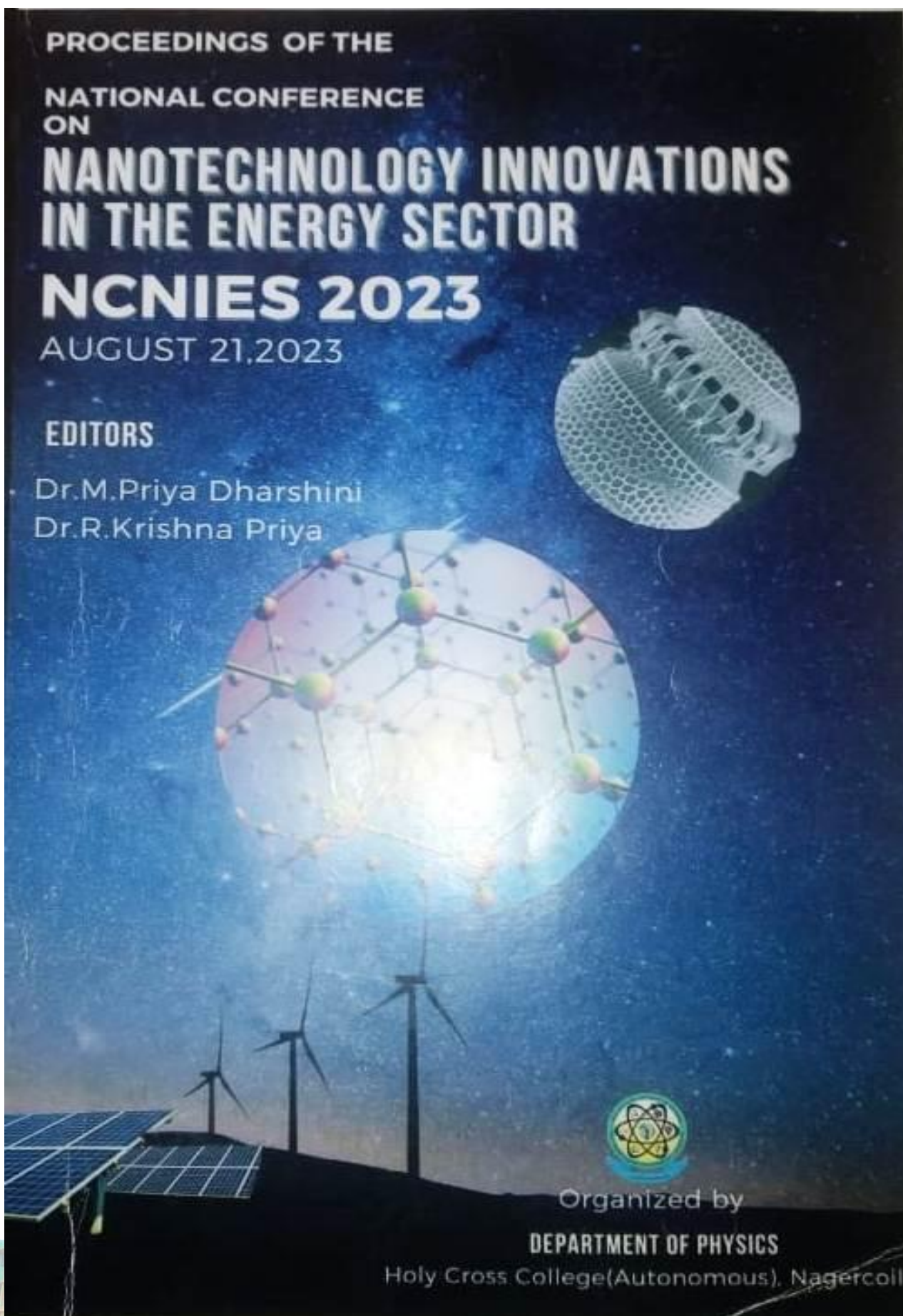


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STRUCTURAL CONFIRMATION AND NBO STUDIES OF (E)-4-(1-(2-(4-(4-CHLOROPHENYL)THIAZOL-2-YL)HYDRAZONO)ETHYL)PHENOL

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ABSTRACT

The compound (E)-4-(1-(2-(4-(4-chlorophenyl)thiazol-2-yl)hydrazono)ethyl)phenol (CTP) shows promise as an anticancer agent. To gain insight into its properties, we used density functional theory (DFT) with the B3LYP method and a 6-311++G (d, p) basis set. Our analysis of CTP's molecular structure and interactions revealed a satisfying agreement between calculated geometry and experimental data. In order to better understand CTP's interactions with enzymes and the factors contributing to its effectiveness and selectivity, we employed a Natural Bond Orbital (NBO) analysis. This examination highlighted a significant stabilization energy of 54.24 kcal/mol, resulting from a charge transfer originating in the bonding orbital C33-H38 and extending to the antibonding orbital C32-H37. This charge transfer mechanism sheds light on the molecular dynamics underlying CTP's potential as a potent and selective anticancer agent.

Keywords: Molecular geometry, NBO

INTRODUCTION

Breast cancer, a prevalent form of invasive cancer primarily affecting females (with an average age of 57 years), holds a prominent global position. It stands as the leading cancer type among women, constituting 25.2% of all cases. In 2015 alone, it led to 14.1 million new diagnoses and caused 533,600 fatalities. Ranking fifth among the leading causes of female cancer-related deaths, breast cancer remains a significant health concern. In the context of India, cervical cancer historically held the highest occurrence among women, particularly in rural areas. However, breast cancer's prevalence has now overtaken cervical cancer, becoming a noteworthy contributor to cancer-related mortality. Despite this shift, cervical cancer continues to be the most common form in rural parts of India [1]. Notably, statistics from India reveal a concerning trend, with one in 16 individuals developing cancer in urban

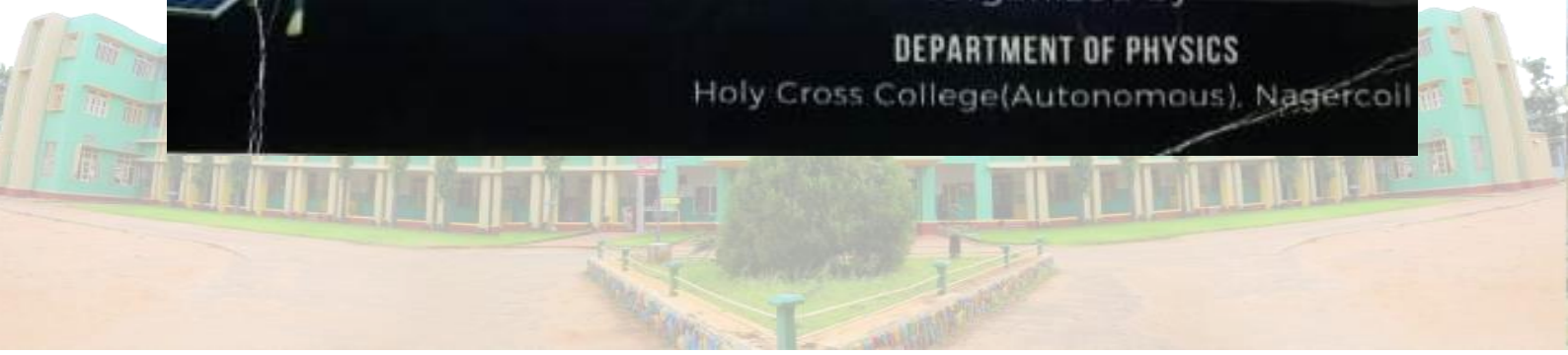
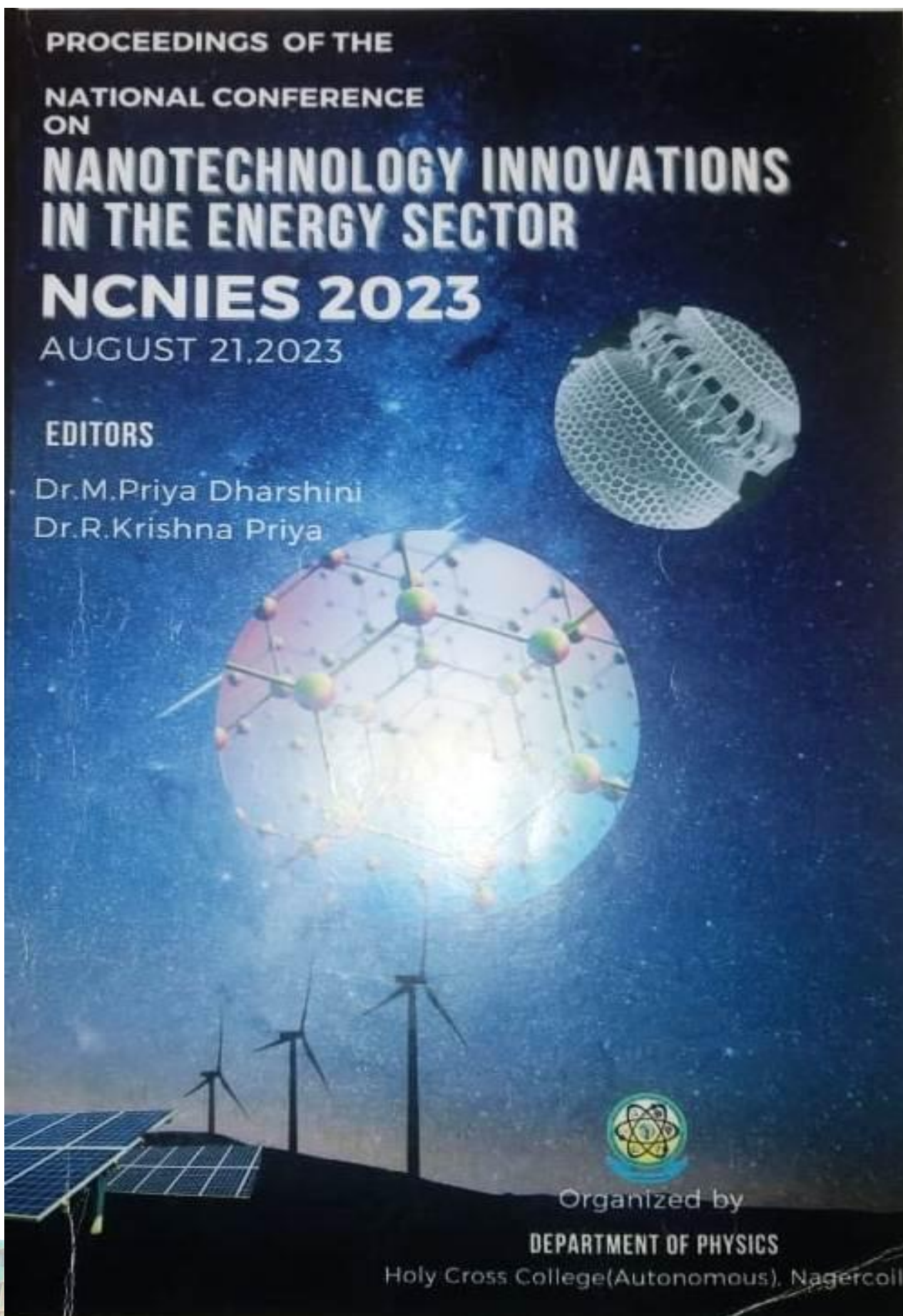


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INHIBITION OF MORINGA LEAF EXTRACT ON BRUSHITE STONE

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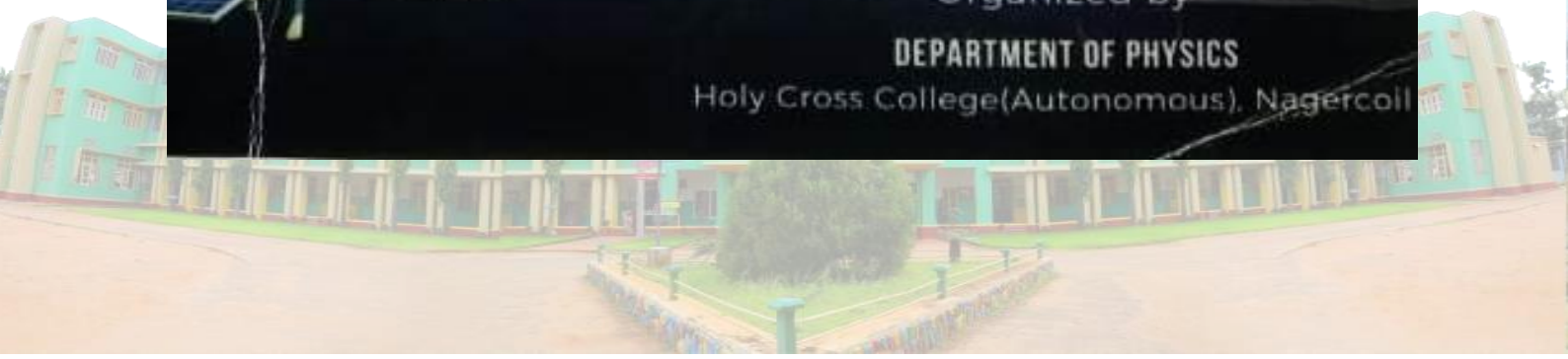
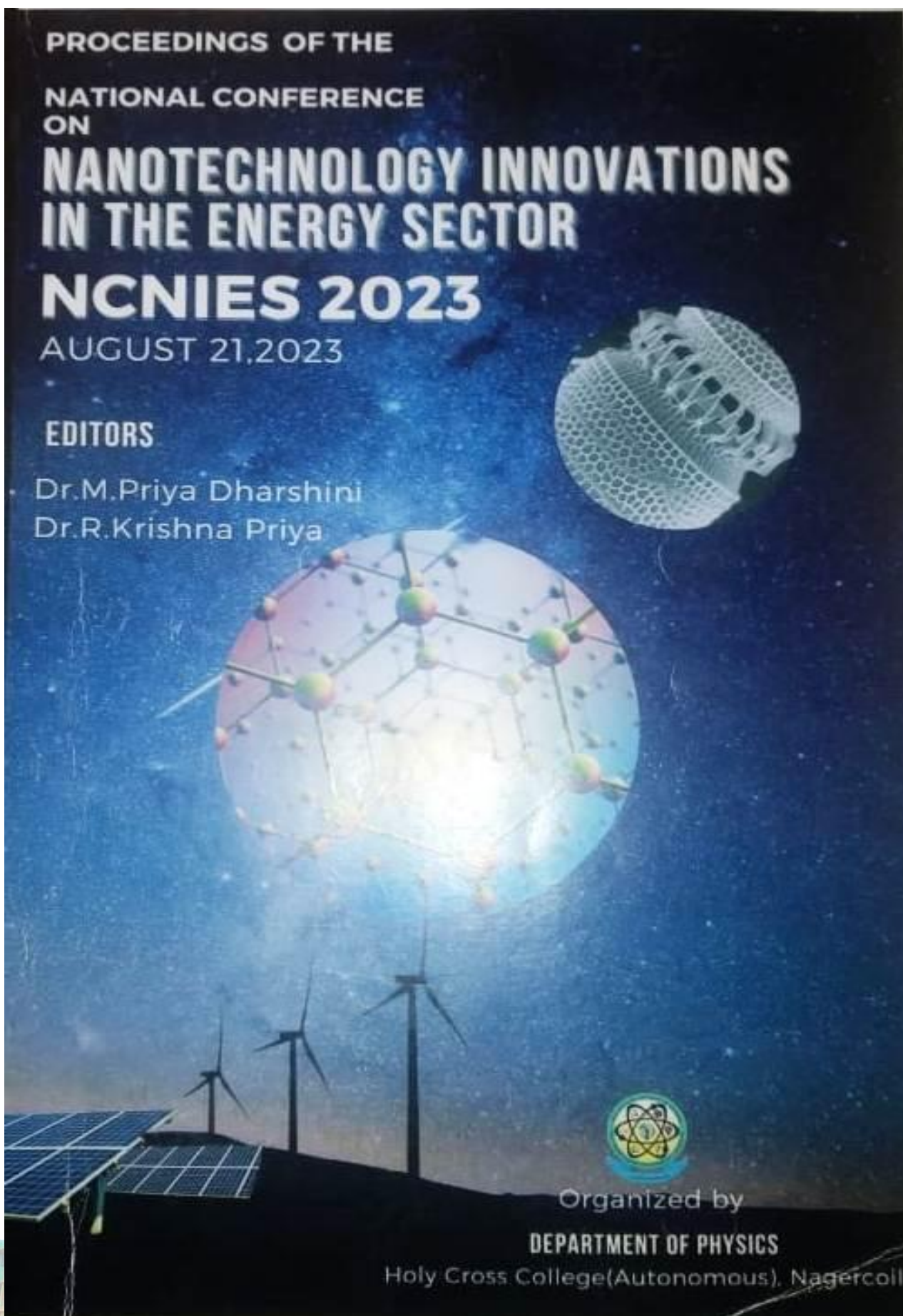
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ABSTRACT

Renal calculi (or) Urinary stone is the problem faced by kids and adults in the society. Medicinal plants help in curing urinary stones. At present there exist vast growing interest in herbal remedies because of the fact that the synthetic drugs lead to unwanted side effects. The invention of safe and efficient plant drugs plays a vital role in humans' life. The present work is about the inhibitory effect of Moringa leaf extract on urinary type brushite crystal. Sodium meta silicate gel is used as the medium to grow brushite crystal at temperature. The Supernatant solution of calcium chloride and calcium acetate with 1.5M concentration are mixed with 1.03g/cm³ density of sodium meta silicate solution. Orthophosphoric acid is added to set the PH value of 6.5 of the mixture within 48 hours. After the development of quality gels, supernatant solution of calcium chloride and calcium acetate without and with herbal extract of different concentration like 10,20,30,40,50mg are gently poured on to the developed gel in various tubes. The growth of the crystal is observed, the inhibition of crystal increases with in the gel medium with respect to the increasing concentration of Moringa leaf extract. The result shows the possible application of Moringa leaf extract for the treatment of urinary type brushite crystal.

INTRODUCTION

People around the world suffers from various health issues, one of the health issues is Kidney stone or Renal calculi [1]. Urinary stone encloses of various form of calcium salts such as Calcium oxalate and Calcium phosphate [2][3]. One of the forms of urinary crystal is Brushite or CHPD crystals [4]. Calcium phosphate minerals play an important role in the formation of kidney stone. It is important to understand the mechanism of stone formation and identification of the inhibitors and promoters of crystals present in the urinary calculi. Here the present study initiated to assess the effect of moringa leaf extract on the growth inhibition of Brushite or CHPD crystals using single diffusion method.



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INVESTIGATION OF THERMAL PROPERTIES ON THE RAW AND ALKALI TREATED BUTEA PARVIFLORA FIBERS (BP) FOR SUSTAINABLE COMPOSITES

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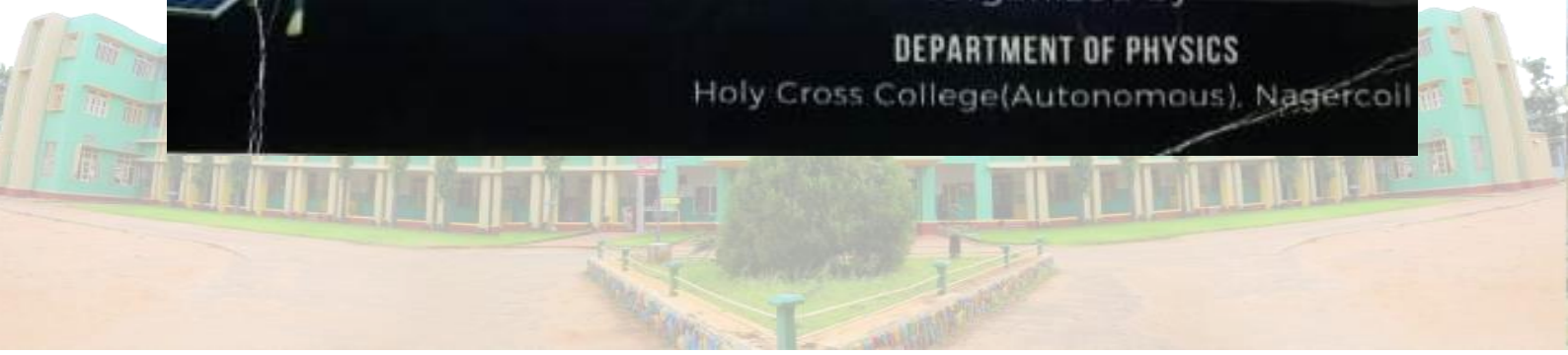
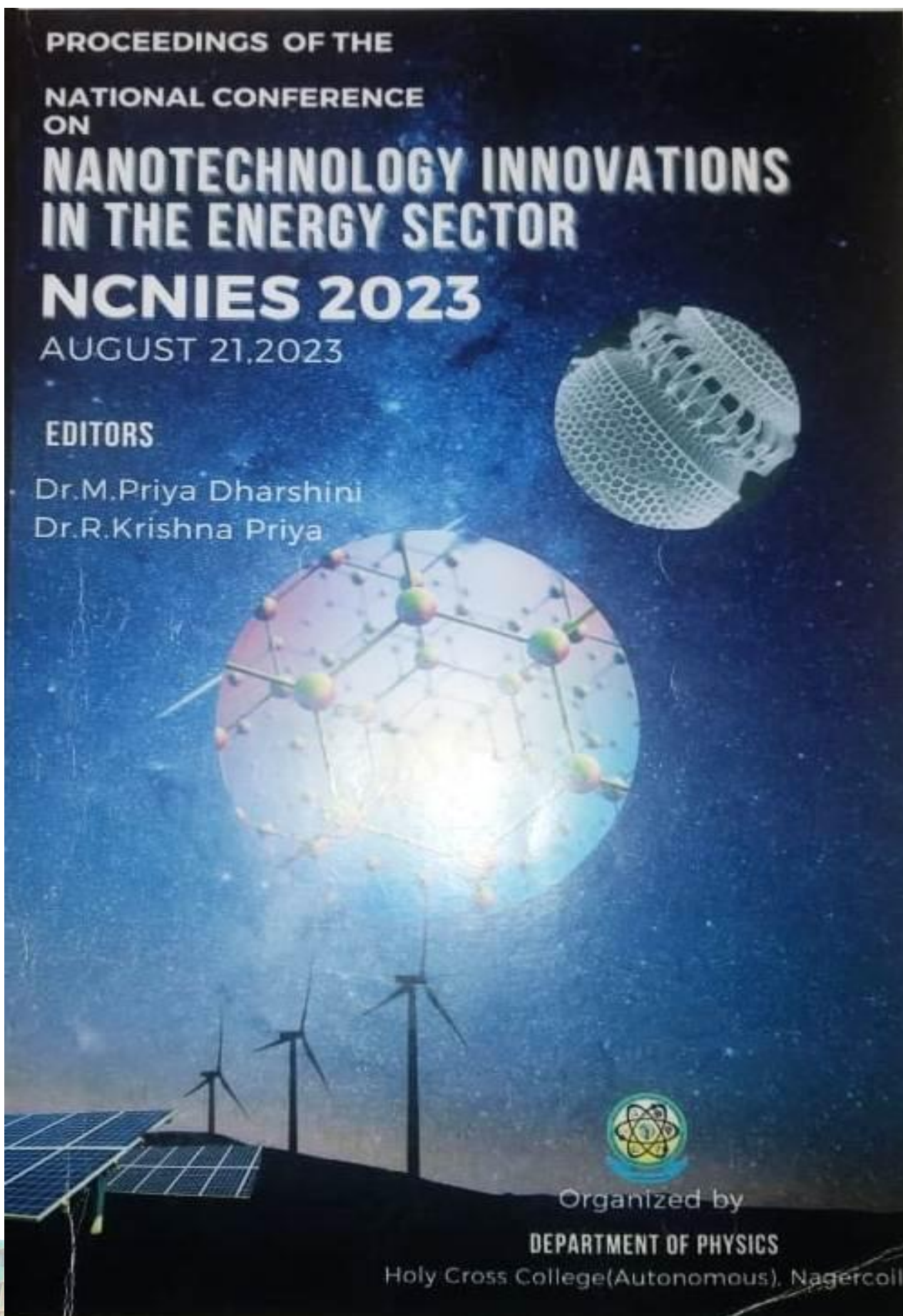
ABSTRACT

Sustainability constitutes a dynamic procedure crucial for the preservation of a verdant ecosystem. Items crafted from natural fibers offer significant ecological advantages due to their lightweight, biodegradable, and affordably recyclable traits. The present study deals with the raw and Potassium hydroxide treatment on Butea parviflora (BP) fibers and its detailed discussion over its thermal behaviour to be utilised for insulation applications in composite making. Tg-DTA thermograms confirmed that BP fibers could extend the thermal resistance upto 240°C. Thermal conductivity measurements show a promising behaviour to be opted for insulation applications. Thermal values found from studies support the viability of BP fiber as a reinforcement for composite making.

Key words: natural fibers, bio-degradability, sustainability

INTRODUCTION

Environmentally friendly materials have the potential to substantially mitigate the pollution impacting our planet. Nevertheless, "natural fibers" have been harnessed by humanity for millennia to fulfill diverse requirements such as attire and housing, relying on them for beneficial and enduring methods [1]. The behavior of composites is dictated by the plant fibers utilized as reinforcement. In contrast to artificial fibers, the strength of natural fibers is significantly influenced by factors like weather conditions, soil composition, maturity of the plants, duration of preservation, and methods employed for fiber processing [2]. Fiber orientation, fiber dispersion, matrix selection, interfacial bonding are the prime traits approached in making composites. They are highly used in the production of vehicle components, floor panels, door panels, seat covers, headliners and truck liners due to its ruthless strength, thermal



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EXTRACTION OF CHITOSAN FROM FENNEROPENAEUS MERGUIENSIS SHRIMP SHELL

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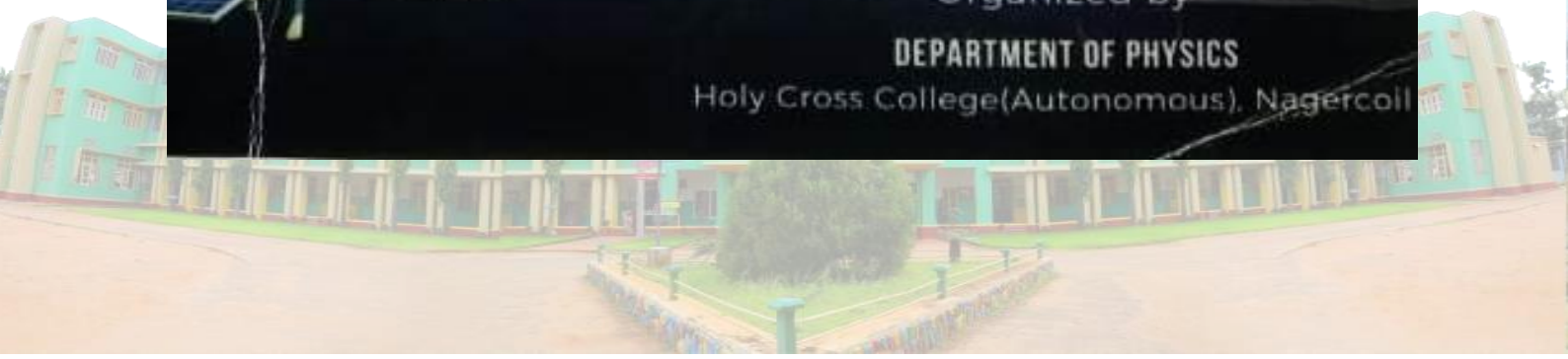
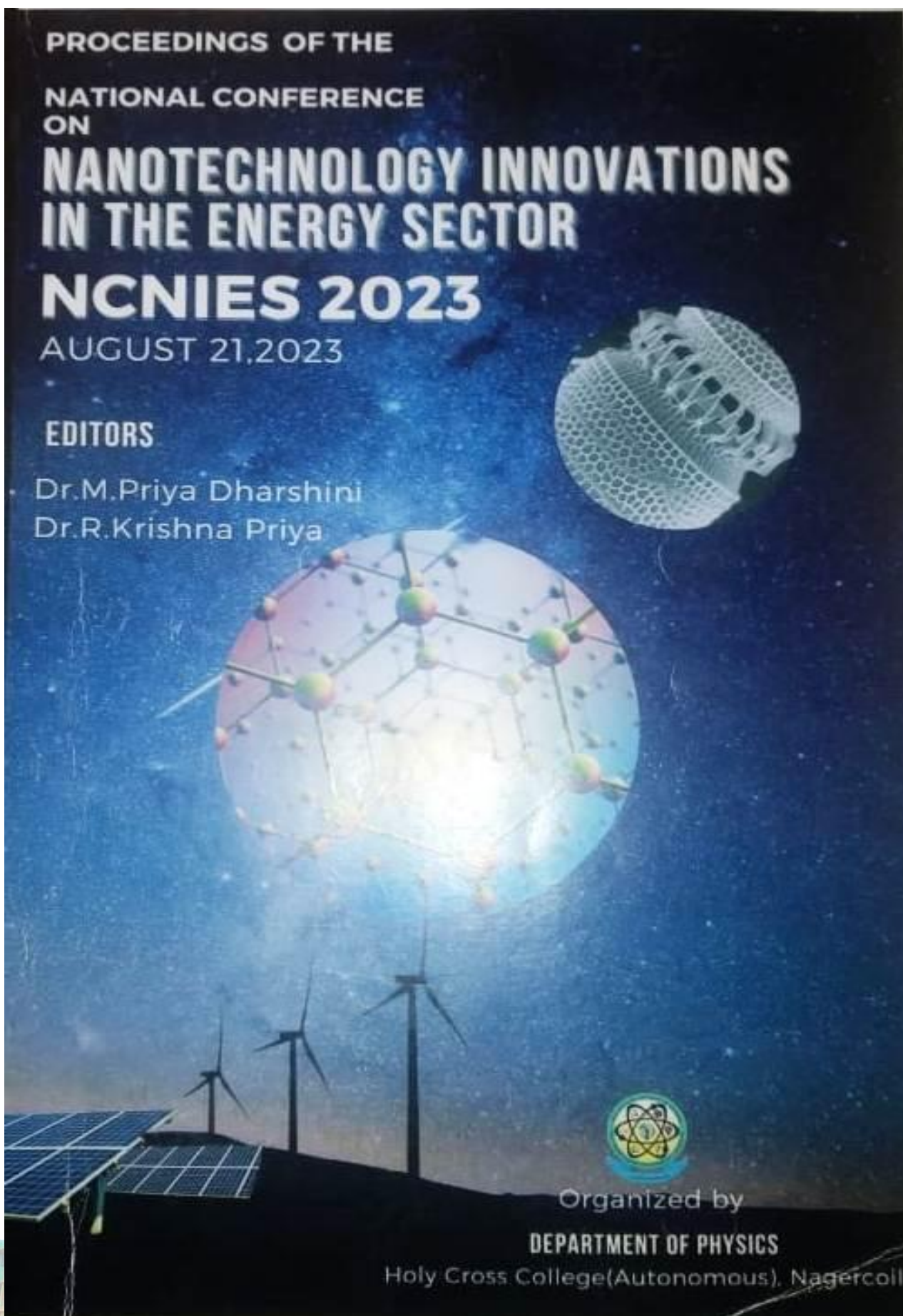
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ABSTRACT

Chitosan, a biocompatible and non-toxic linear polysaccharide derived from the partial deacetylation of chitin, offers diverse potential applications. Chitin, the second most abundant natural polysaccharide after cellulose, is primarily sourced from various crustaceans such as shrimp, crab, krill, squid, lobster and fungi. This study focuses on the chemical extraction of chitosan from Fenneropenaeus merguensis shrimp shells. The obtained material underwent extensive characterization, including X-Ray Diffraction (XRD), Fourier Transform Infrared Spectroscopy (FTIR), Scanning Electron Microscopy (SEM), and Energy Dispersive X-Ray Spectroscopy (EDX). The XRD pattern of chitosan exhibition sharp peaks at 19.91° and 10.86° , confirming its identity. In the FTIR spectra, the peaks at 1652 cm^{-1} and 1594 cm^{-1} indicated C=O stretching (amide I) and N-H bending (amide II) vibrations respectively. The SEM images unveiled well-defined interconnected pores of varying sizes on the chitosan material's surface. The EDX analysis revealed the presence of carbon (C), oxygen (O), and nitrogen (N) elements with varying intensities. This study's results establish the successful extraction of chitosan from Fenneropenaeus merguensis shrimp shells, demonstrating its potential for environmental sustainability. The discernible evidence provided by XRD, FTIR, SEM and EDX analyses validates the synthesized material's identity as chitosan. This transformation of shrimp shell waste into chitosan signifies a significant achievement, demonstrating its potential for mitigating environmental contaminants.

Keywords: Fenneropenaeus merguensis, Chitosan, Biopolymer, Scanning Electron Microscopy (SEM), Energy Dispersive X-ray Spectroscopy (EDX).



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EFFECT OF POTASSIUM PERMANGANATE ($KMnO_4$) ON THE PHYSICAL SPECTROSCOPIC AND THERMAL PROPERTIES OF ZEA MAYS ROOT FIBRES

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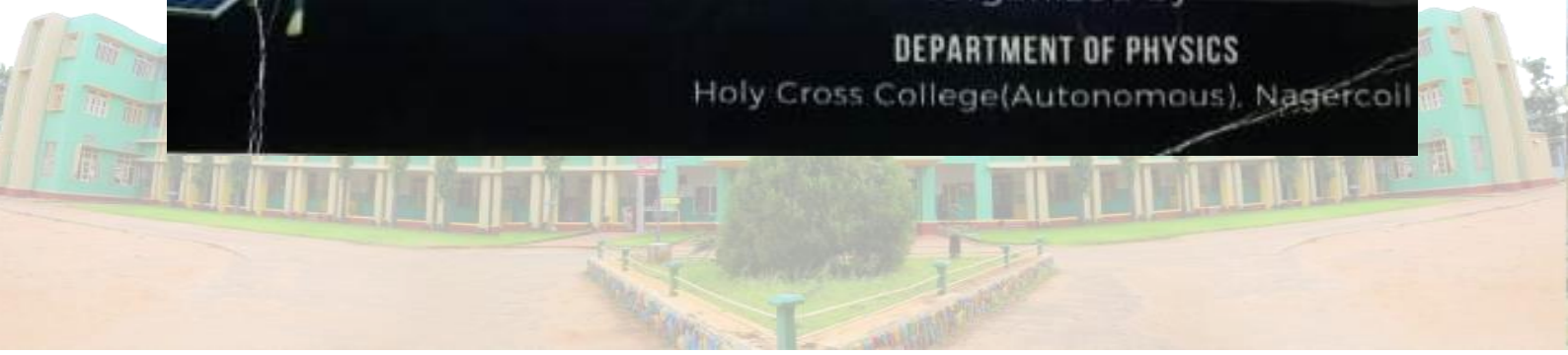
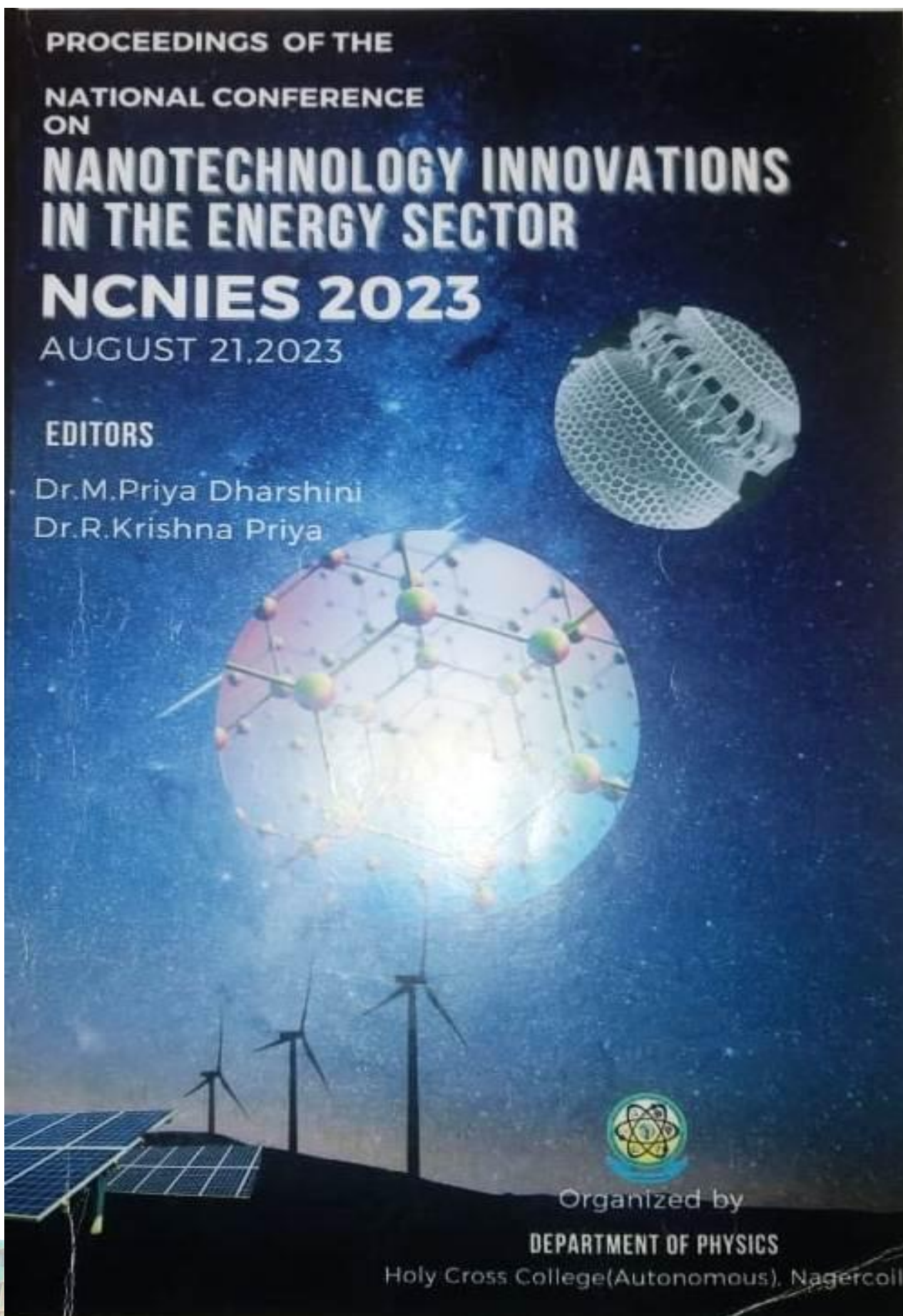
ABSTRACT

Natural fibres are regarded as a renewable resource with many benefits, such as high stiffness and strength as well as biodegradable characteristics. One of the main components of natural fibre reinforced composites is natural fibres, which, when combined with a polymer component, give the composite more stiffness and strength. By removing the hydroxyl groups through chemical treatments, the fibres' hydrophilic properties can be changed. Accordingly, the research material, Zea mays (Zm) root fibres, are hydroponically grown and then chemically treated with permanganate solution to modify the fibre surface. The untreated and permanganate treated samples are analysed to study their characteristics. The samples are submitted to Physical, FTIR and Thermal analyses. The density, thermal conductivity, aspect ratio, linear density and diameter are studied under physical analysis. FT-IR analysis clarifies the different vibrational groups concerned with the fibre samples. The thermal activation energy of the samples are determined by thermal analysis. According to the findings from all the studies, Zea mays root fibres, both untreated and treated with permanganate, can serve as a reliable reinforcement for applications based on composite materials.

Keywords: Zea mays root fibres, renewable, biodegradable, polymer, reliable reinforcement

INTRODUCTION

Natural fibers are a low-cost, low-density, and biodegradable alternative to synthetic fibers. For the production of natural fiber-reinforced composites, a better understanding of the fiber-matrix interface and the ability to transfer stress from the matrix to the fiber are required. Chemical treatments are believed in modifying the fiber surface properties because it can



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MECHANICAL AND MORPHOLOGICAL BEHAVIOUR OF SODIUM ACETATE TREATED ACACIA PENNATA FIBERS

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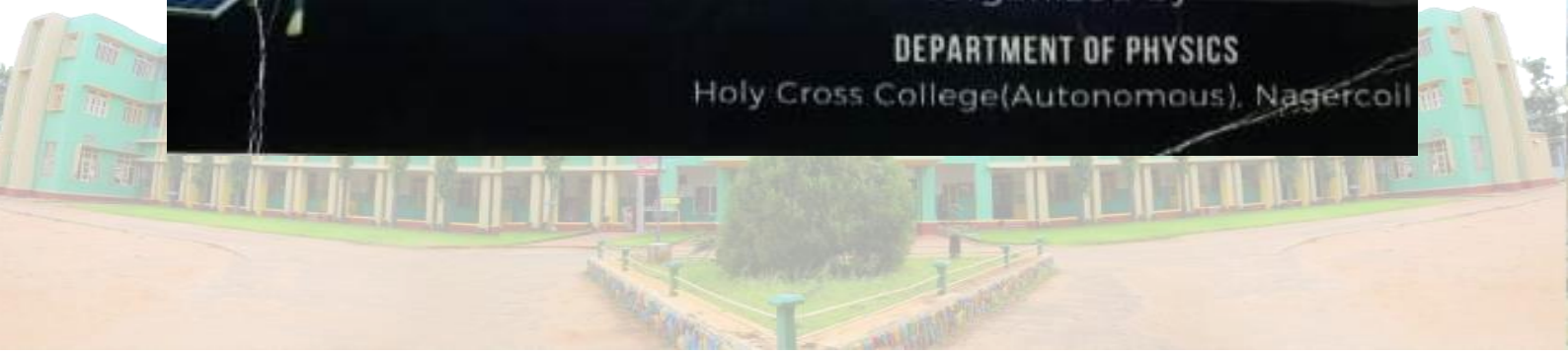
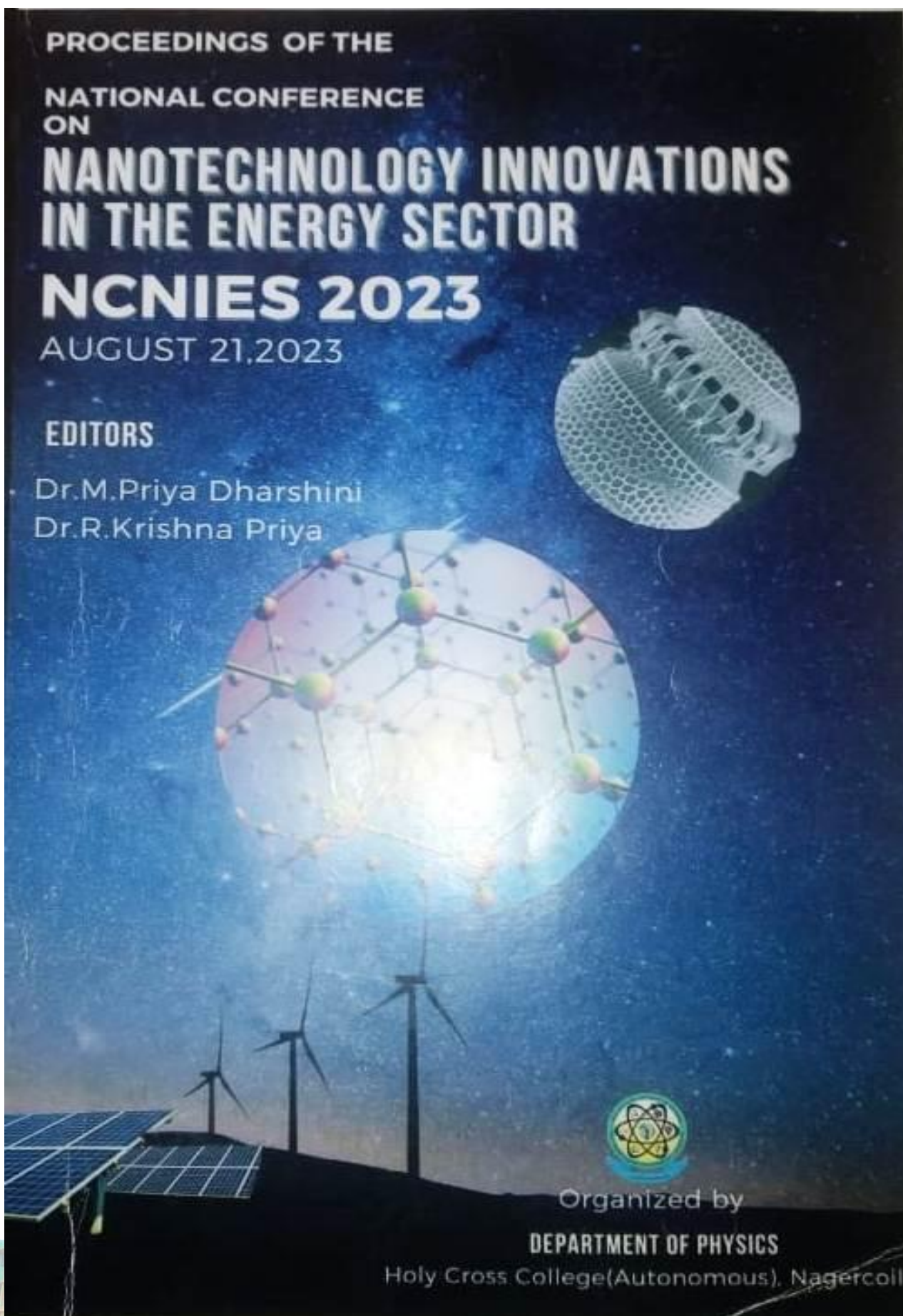
ABSTRACT

In recent decades, the research groups in academia and industries have been working for the development of natural fiber reinforced polymer composites. These natural fibers are having the extraordinary properties such as low density, recyclability, completely biodegradable, non-abrasive, nontoxic and high specific properties. The present study covers the morphological and mechanical characterization of Acacia pennata fibre, as a potential reinforcement in polymer composites. The effect of treating the fibres with sodium acetate increase its qualities has been seen through the use of scanning electron microscope (SEM) analysis, X-ray diffraction (XRD) and mechanical property tester. According to XRD analysis the elimination of lignin and wax-like impurities resulted in an increase in the AP fibre crystalline index (79.73%). Tensile strength (557.58 MPa) and elongation at break (2.99%) increased respectively by sodium acetate treatment. The surface nature and quality of AP fibre also improved by this treatment. It was confirmed by the reduction of chemical composition (such as hemicellulose, lignin and pectin). Given its tensile property, the fibre can be suggested as a reinforcement in polymer composites for light-weight applications.

Keywords: Chemical composition, X-ray diffraction and Tensile strength.

INTRODUCTION

Emergence of polymers in the beginning of the 19th century ushered a new era in research with a new option of using the natural fibers in more diversified fields. Natural fibers regarded as one of the eco-friendlier materials.



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REVIEW: SURFACE-ENHANCED RAMAN SPECTROSCOPY (SERS) IN DETECTION OF PESTICIDES

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ABSTRACT

Both a health and financial perspective place a premium on food quality and safety. Surface-enhanced Raman spectroscopy (SERS) methods offer distinct advantages in the field of food detection due to their quick analysis times, excellent detection sensitivity, and lack of water phase interference. This paper discusses current and future developments in the use of SERS in food quality and safety from the standpoint of SERS substrate and SERS-composite systems. The primary benefits and drawbacks of SERS systems such as molecular labeling, immune chromatographic test, microfluidics, molecularly imprinted polymers, colorimetry, and imaging are explored. A critical assessment of SERS's uses in food safety is done with an emphasis on the detection of pesticides.

Keywords: SERS, Pesticides

INTRODUCTION

The excessive use of pesticides in agriculture has recently been the main cause of frequent food-related epidemics as a result of the growing global population and quick environmental changes [1]. Therefore, a number of governmental, non-governmental, and international organizations have expressed a keen interest in research projects focusing on food safety and quality control. Additionally, the threat of food adulteration is becoming an issue as a result of the ongoing expansion of numerous food sectors, necessitating the development of effective and affordable food safety testing techniques [2]. Chemical pollution, microbiological pollution, and physical pollution are the three types of typical food safety issues. Mass spectrometry (MS) (Barbieri et al., 2016), enzyme-linked immunosorbent assay (ELISA) (Panda, Taylor, & Goodborn, 2010), liquid chromatography (LC) (Lytic, Louren, & Mesa, 2014), and others are some of the conventional analytical techniques that are frequently used to check food quality [3]. As an alternative, Raman scattering or spectroscopy has become a new

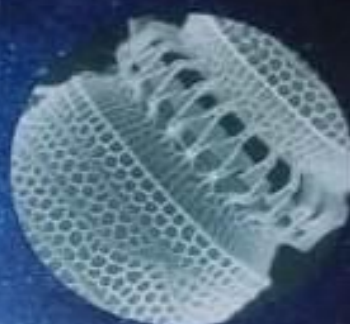
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IMPACT OF CU DOPING ON THE STRUCTURAL, MORPHOLOGICAL AND OPTICAL ACTIVITY OF V₂O₅ NANOWIRES AND THEIR CHARACTERISTICS

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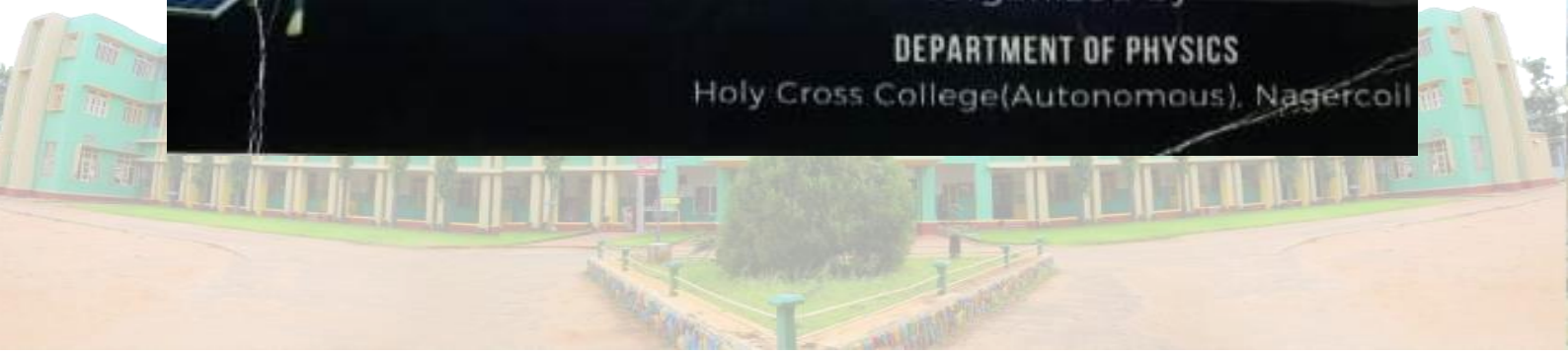
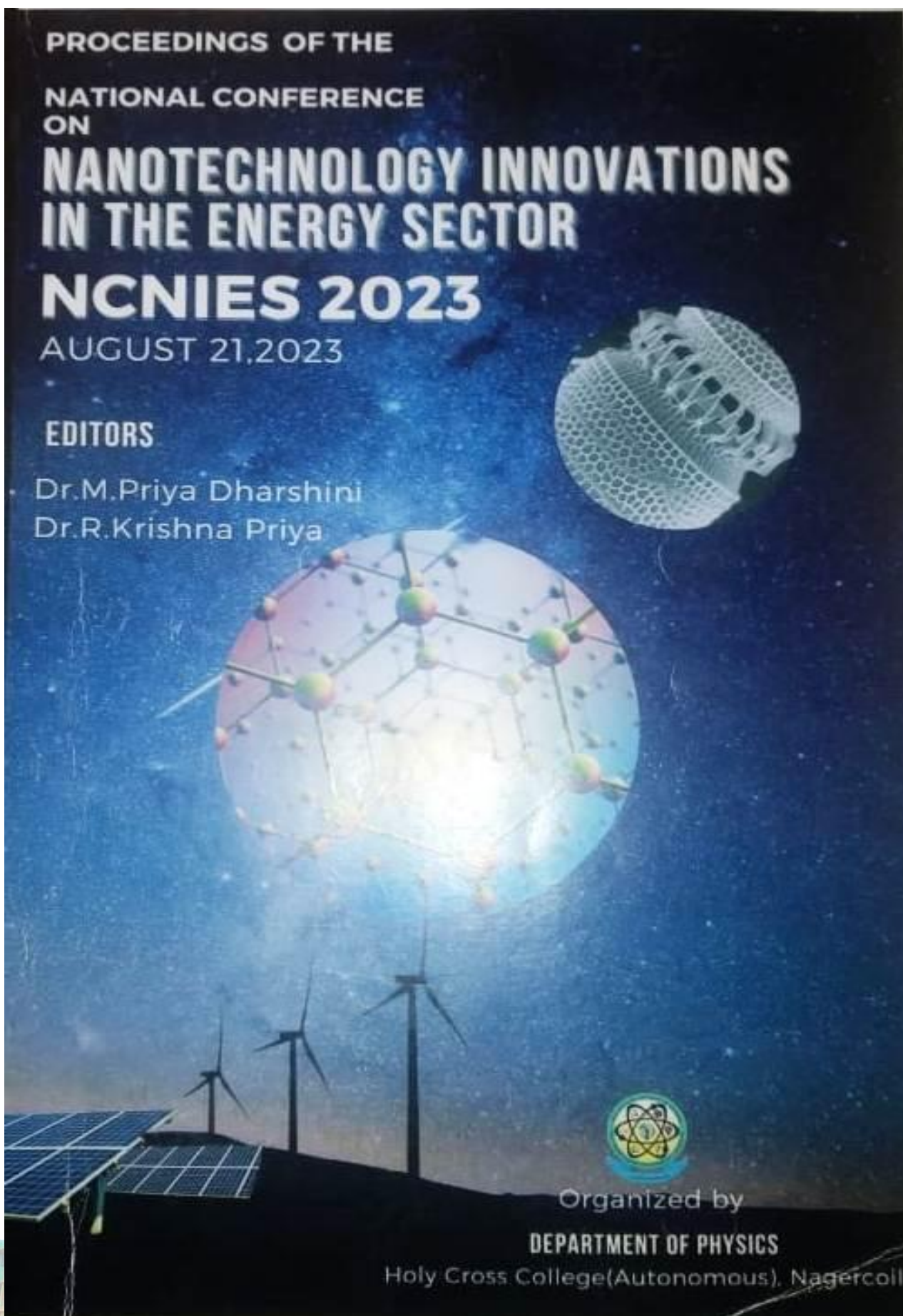
ABSTRACT

In this paper, we report a co precipitation method used to synthesize pure and Cu-doped V₂O₅ nano rods with different doping concentrations, followed by annealing at 600°C and characterizations using several techniques. Indeed, a growth mechanism explaining the morphological evolution under the experimental conditions is also proposed. The XRD patterns revealed that all of the studied samples consist of a single V₂O₅ phase and are well crystallized with a preferential orientation. The presence of intrinsic defects and internal stresses in the lattice structure of the Cu_xV₂O₅ samples has been substantiated by detailed analysis of the XRD. Apart from the doping level, there was an assessment of identical tiny peaks attributed to the formation of a secondary phase of CuO. SEM images confirmed the presence of agglomerated particles on the surface; the coverage increased with Cu doping level. The presence of various elements (Cu, V & O) and their compositions were confirmed using EDS and XPS measurements. The photoluminescence spectrum reveals a strong blue emission at 418 nm is ascribed to the electronic transition from vanadium interstitial to the valence band. Further, we fabricated the junction diodes by the sol-gel spray depositing CVO nanostructures in a colloidal form on the p-Si substrate at 150°C. Depending on the applied voltage and Cu doping level the rectification behavior with a high rectification ratio (RR) was observed from the I-V characteristics of nano diodes.

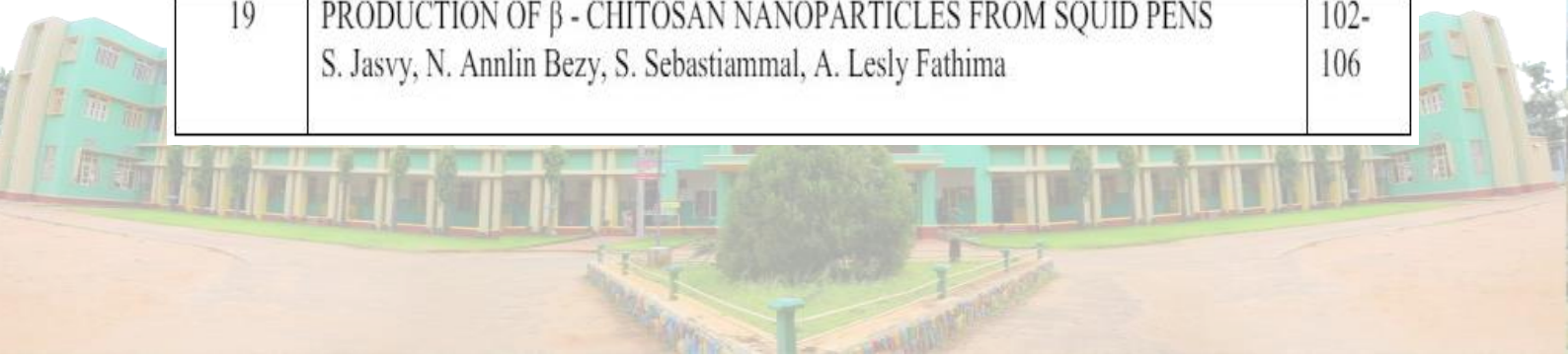
Key words: defects, photoluminescence, agglomerated, interstitial, morphological.

INTRODUCTION

V₂O₅ has been gained significant interest in the applied research to range of applications [1]. V₂O₅ is the most stable among all vanadium oxides and has high oxidation state [2, 3]. Transition metal oxides have been a subject of research in recent years in view of their



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STRUCTURAL, MORPHOLOGICAL AND PHOTOLUMINESCENCE PROPERTIES OF ZnO-CuO NANOCOMPOSITES SYNTHESIZED BY CO-PRECIPITATION METHOD

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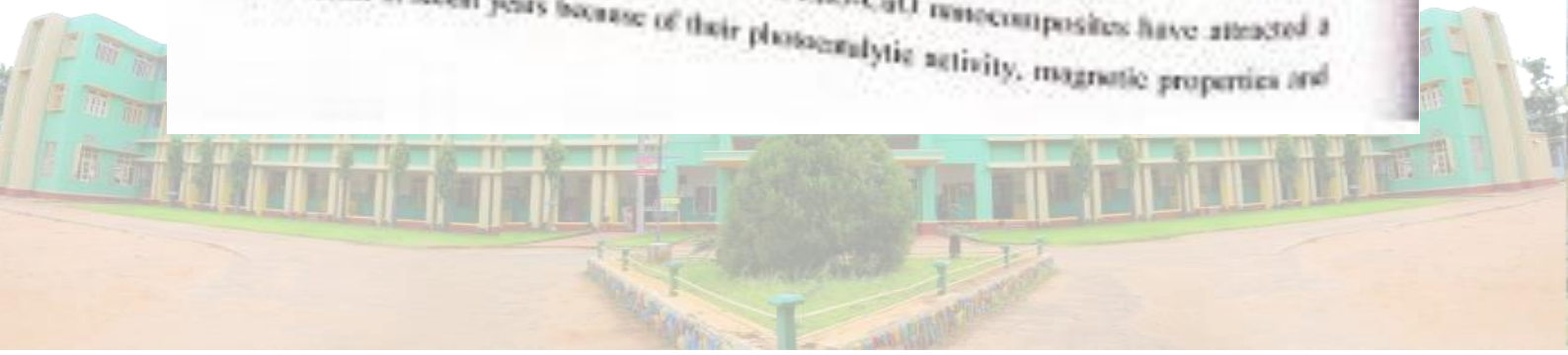
ABSTRACT

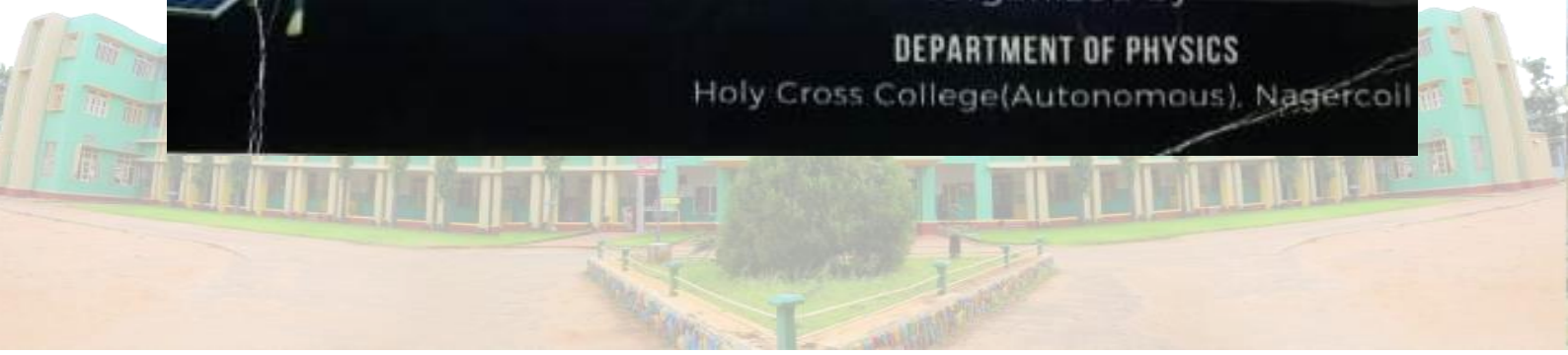
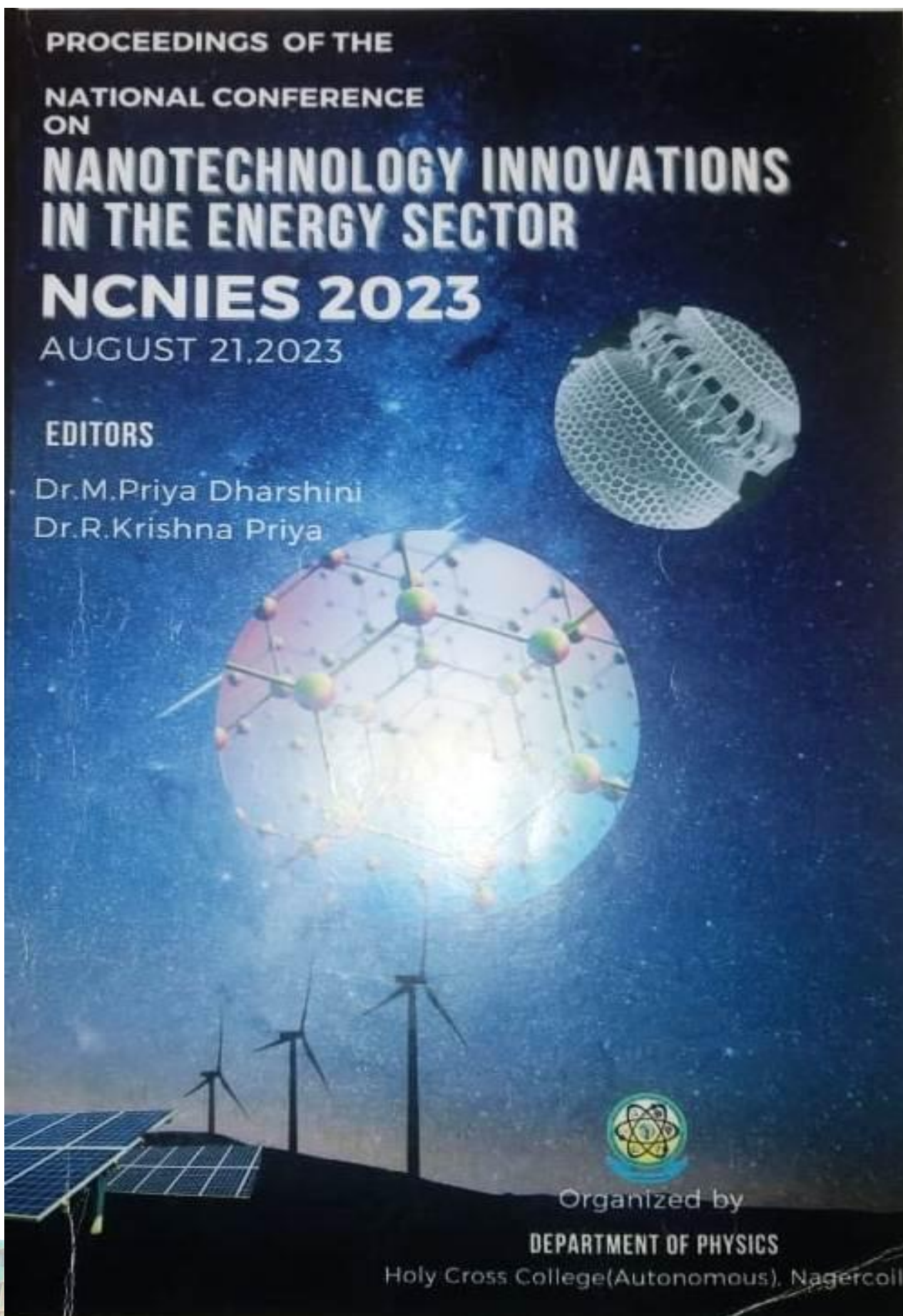
ZnO-CuO nanocomposites have been synthesized by simple chemical co-precipitation method and the characterization techniques such as X-ray diffraction (PXRD), scanning electron microscopy (SEM), photoluminescence (PL) and energy dispersive X-ray analysis (EDAX) have been extensively employed to assess the nanocomposites crystalline phase, particle size and morphology. The development of nanocomposites with ZnO (hexagonal) and CuO (monoclinic) phases has been verified by the PXRD pattern. Additionally, the ZnO-CuO nanocomposites displayed the property of a strong (101) orientation and a crystal grain size of 26.58 nm. The image captured by the FESEM reveals the pine needle like structure. In conclusion, the synthesized ZnO-CuO nanocomposites exhibited promising properties for potential applications in optoelectronic devices and photocatalysis. The combined PXRD, SEM, and EDAX analyses provide a comprehensive understanding of the structural, optical, and morphological characteristics of the nanocomposites, contributing to their further development and utilization in various technological domains. The present work gives a concise overview of the key aspects related to ZnO-CuO nanocomposites, focusing on their synthesis, characterization, and photocatalytic application.

Keywords: nanocomposites, mixed metal oxides, coprecipitation method, photocatalyst

INTRODUCTION

Nanocomposites are materials engineered at the nanoscale level, where the properties of individual components are combined to create new or enhanced properties in the composite material. Zinc oxide (ZnO) and copper oxide (CuO) are both semiconducting metal oxides with various applications due to their unique properties. ZnO-CuO nanocomposites have attracted a lot of attention in recent years because of their photocatalytic activity, magnetic properties and





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ANALYSIS OF THE STRUCTURE, MORPHOLOGY AND PHOTOLUMINESCENCE CHARACTERISTICS FOR CdO-NiO NANOSTRUCTURES PRODUCED BY CO-PRECIIPITATION METHOD

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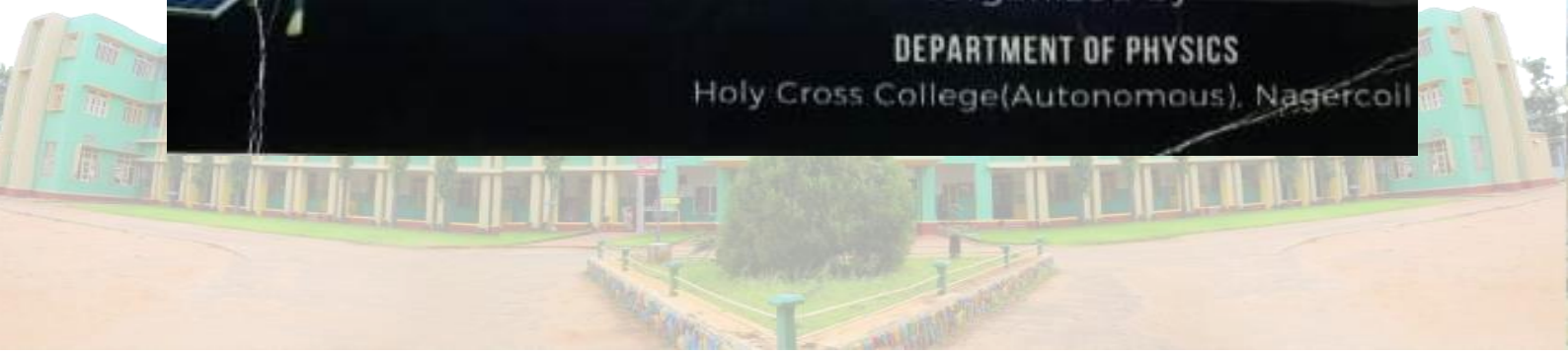
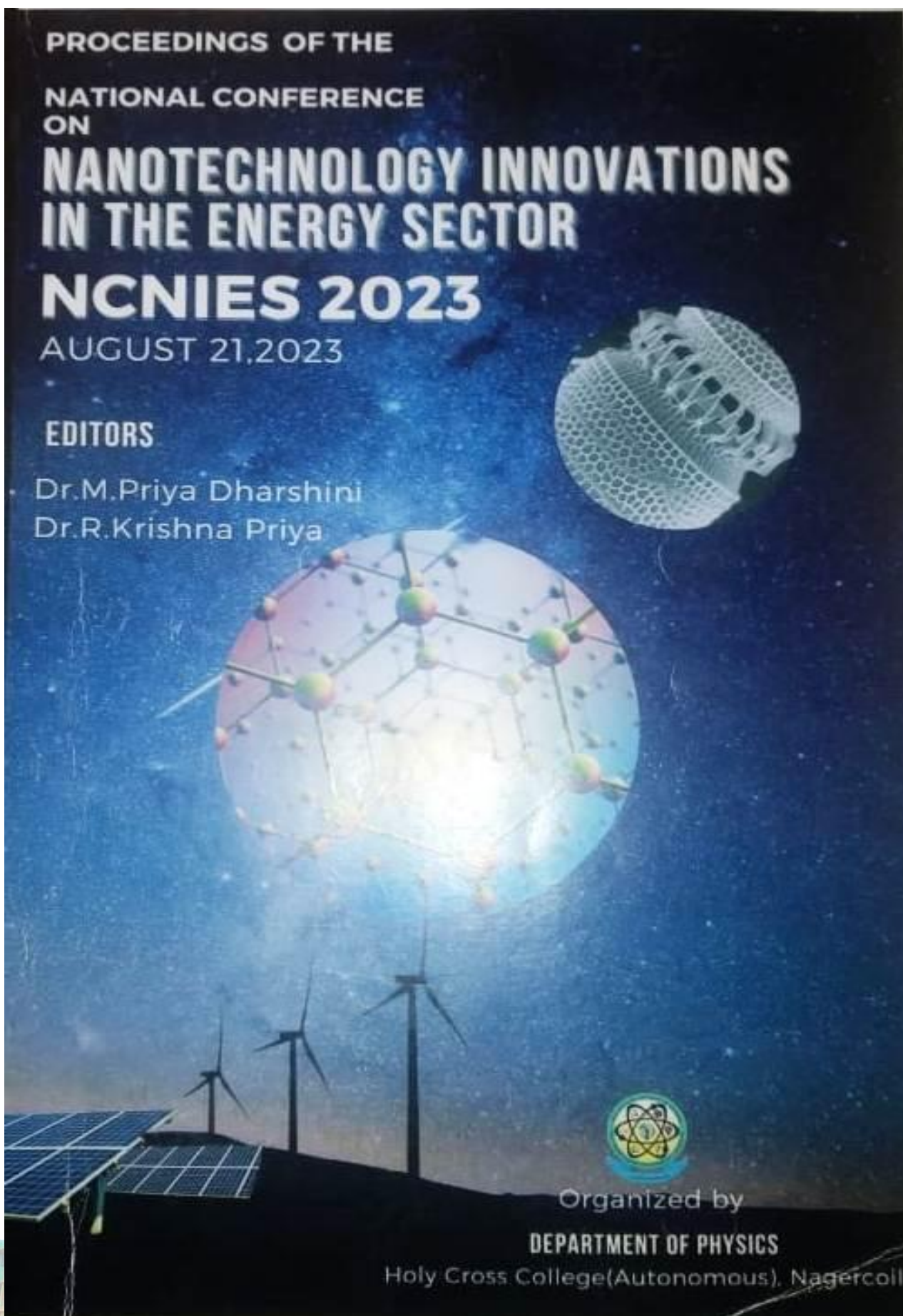
ABSTRACT

CdO-NiO nanocomposites were synthesized by using an effective and simple technique co-precipitation method and examined by employing different characterization methods. The PXRD pattern confirmed the formation of nanocomposites with CdO (cubic)-NiO (cubic) phases. Moreover, the nanocomposites exhibited a characteristic strong (111) plane orientation. The FESEM images depicted agglomerated spherical-shaped particles, contributing to the nanocomposites surface structure. The elemental composition of the CdO-NiO nanocomposites was rigorously confirmed through energy-dispersive X-ray spectroscopy (EDAX) analysis. The EDAX spectrum offered definitive proof of the presence of key elements comprising Cadmium (Cd), Nickel (Ni), and Oxygen (O). The photoluminescence spectra of the nanocomposites exhibited emission bands that were correlated with newly formed energy levels resulting from defects. The determined crystalline structure, morphological characteristics and elemental composition contribute to an enhanced understanding of the synthesized nanocomposites, thereby paving the way for potential applications in diverse fields.

Keywords: Nanocomposites, CdO-NiO, Co-precipitation, Nanoparticles

INTRODUCTION

Metal oxide nanocomposites have gained significant interest in recent times owing to their distinct characteristics includes structural, electrical, photocatalytic, mechanical, adsorbent, thermal, and optical properties [1, 2]. These nanocomposites arise from combining two or more oxides at the nanoscale level and the ratios of the individual oxide components in the mixture have a profound impact on the properties of the resulting materials [3]. The nanocomposites hold substantial potential across a spectrum of applications including fuel cells, battery components, photoelectric apparatus, UV-detection systems, gas sensing tools and solar cells [4-6]. Cadmium



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PRODUCTION OF β - CHITOSAN NANOPARTICLES FROM SQUID PENS

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ABSTRACT

Chitosan is a naturally derived biopolymer obtained from deacetylation of chitin a natural component of marine endoskeleton and exoskeleton, fungi and also the outer covering of insects. Shrimps, Crabs and squid gladius are some of the most commonly used sources of chitosan. Squid Pens from local processing industries were collected and treated to form chitin which was then further deacetylated to form Chitosan. The β form of Chitosan was confirmed by XRD and the functional groups were confirmed with FTIR. β - Chitosan thus obtained was then reduced to form Chitosan nanoparticles by the process of ionic gelation, with the help of the crosslinking agent. The resultant nanoparticles surface morphology was analyzed with TEM.

INTRODUCTION

Every year tons of seafood wastes are dumped into landfills and oceans. Though these wastes decompose with time unlike other waste products, improper and continuous disposal of these food wastes from seafood processing industries can be hazardous not only to the environment but also to the marine ecosystems when discarded into oceans. The production of chitosan from such seafood wastes is not only an ample solution to waste management but also an added advantage as the products that are derived from chitosan provides promising answer to a greener future. Some examples of chitosan derived materials are Bio plastics [1], Scaffolds, Membranes and many more. Chitosan finds major application in the fields of agriculture, Water Treatment, Food Industry, Textile, Nanotechnology and Pharmaceutical Industry.

MATERIALS AND METHODS

Discarded Squid pens were collected in bulk and washed to remove visible protein matter from the pens. These pens were then dried well and finely powdered for further treatments. Sodium Hydroxide, Hydrochloric acid, Acetic acid and Sodium Tri Poly Phosphate (STPP) were obtained from Sigma Aldrich.



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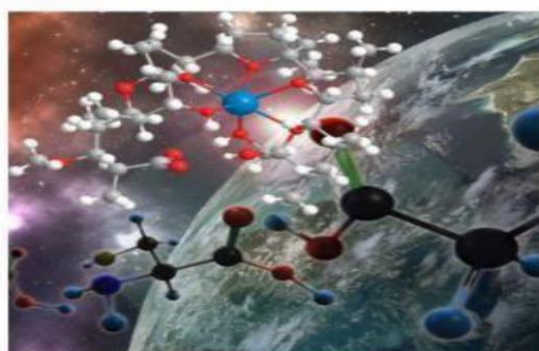


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**"INNOVATIVE STRATEGIES IN ASTRO AND SYNTHETIC
ORGANIC CHEMISTRY" (ICISASOC - 2023)**

27th February 2023



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Holy Cross College (Autonomous),
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A REVIEW ON NICKEL OXIDE (NiO) BASED NANOCOMPOSITES FOR THE DEGRADATION OF DYES IN WASTE WATER

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Abstract

Natural resource contamination by unwanted, hazardous chemical materials are getting worse every day. In order to degrade various organic contaminants, photocatalysis has become a popular and environmentally compatible technology. For the photocatalysis approach to be successful, a really efficient photocatalyst is required. To enhance the photodegradation performance, noble metals and transition metal oxide semiconductors themselves combined together to form the effective and reliable photocatalyst. Nickel oxide (NiO) is one of the potential metal oxide semiconductor used for the degradation of dyes. From the literature survey of the optical properties, it is seen that the band gap of NiO is higher and has large excitation binding energy and therefore can absorb large region of UV spectrum. NiO has been shown to be superior to other forms of photocatalyst in terms of applicability, even though other existing semiconductor materials have distinct photocatalyst properties and an energy bandwidth that is similar to the range of NiO bandwidth. This review describes the structural, morphological, optical and photocatalytic activity of numerous NiO based nanocomposites. The application of photocatalyst in treating organic dyes in waste water are also discussed in detail.

Keywords: Nickel Oxide, Photocatalyst, Semiconductor, Dyes, Nanocomposites

1. Introduction

Organic pollutants in water sources are becoming more prevalent around the world as the world population grows and industrial and commercial development continues[1]. Healthy water is described as water that is free of germs and hazardous substances, and it is necessary for life to continue. Furthermore, water is a crucial raw resource in many important sectors, such as electronics, pharmaceuticals, and food technologies [2]. In earlier decades, the efficiency of photocatalytic activity to degrade organic pollutants by semiconductor metal-oxide nanoparticles such as NiO garnered public interest due to NiO's remarkable transparency as a p-type semiconductor with a broadband gap[3]. NiO has high photo-catalytic efficiency, low cost and low toxicity, high physical and chemical stability, especially, strong ability of fully decomposing organic pollutant into harmless species [4]. According to the studies that have been conducted, nanoscaled materials are capable of displaying novel and distinctive properties, and among them, nickel oxide based semiconductors that are part of the family of photocatalyst includes Fe₃O₄, CdO, TiO₂, MnO, CuO, ZnO, can be used in regard to polluted environments[5].

2. Structural properties

Powder X-ray Diffraction analysis is one of the major study used to reveal the structural properties of the nanomaterials. To investigate the crystal surface structure and crystallinity of the nanomaterials, X-ray diffractometers have been specially designed. The average crystalline size can be calculated by De-bye Scherrer equation given as.[6]

$$D = \frac{0.9 \lambda}{\beta \cos \theta}$$

Some of the structural properties of Nickel oxide based nanocomposites are given below:



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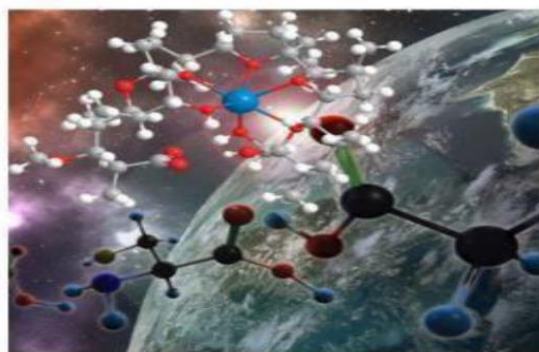


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DETERMINATION OF DENSITY, MORPHOLOGY AND CHEMICAL COMPONENTS PRESENT IN RAW AND TREATED TAMARINDUSINDICA SHELL POWDER

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Abstract

Natural fibres have been preferred over a variety of synthetic fibres nowadays because of its fascinating characteristics like low density, light weight, affordable price, large availability and biodegradability. Natural fibres are being used in a wide range of adaptable ways in the production of natural fibre based components including the creation of ropes, vehicle parts, fabrics, and minor domestic applications. Moreover, they are utilised as reinforcements and fillers in natural fibre polymer composites for industrial applications. To be used as a reinforcement, the natural fibre chosen *ie*) Tamarindus indica (Ti) shell powder should be investigated for its characteristics. The characterization techniques involved are Pycnometric analysis of density, SEM analysis, CHNS analysis and Chemical analysis. The densities of five different samples based on Tamarindusindica before and after treatment are found to reveal the most light weight sample to be used in low density composites. The morphology of raw Tamarindusindica shell powder is studied from SEM images. The surface of the sample is analysed to study about the interlocking capability of the sample with polymer matrices. CHNS analysis is employed to find the elemental composition of the raw Tamarindusindica shell powder. Finally, chemical analysis is used for the quantitative analysis of chemical composition of raw Tamarindusindica shell powder. From all the analyses, it could be concluded that the samples involved can be used as a good natural fibre reinforcements in many of the well-established matrices.

Keywords: Tamarindusindica (Ti) shell powder, low density, morphology, elemental composition, chemical composition

1. Introduction

Scientists and researchers have recently been working to maximize the potential of natural fibres to create the most sustainable, bio degradable and high-quality natural fibre products [1]. Natural fibre-based manufacturing plants can control the emission of hazardous chemical and non-degradable waste generation during the manufacturing over the synthetic fibres-based manufacturing plants [2]. Fibre-reinforced composite materials have been the choice for the commercial production of large-scale wind turbine rotor blades especially glass and carbon fibres. Carbon fibres are preferred over glass fibres because they provide superior mechanical strength due to their lower density and higher fatigue ratio which extends the life of the blades. There is a huge potential to reduce the overall manufacturing cost of the wind turbine blades and replace the man-made fibres with natural fibre-reinforced composite materials [3]. The natural fibre reinforced materials have been taken out from different portions of the plant for example roots, seeds, stems, leaves, bark, and fruits, etc. and these are the utmost important sources of cellulosic fibres [4,5]. In various applications, natural fibres extracted from plants are used as reinforcements in both thermoplastic and thermoset composites [6]. In this research work, the fibres from Tamarindusindica plant, grown in the Indian subcontinent are extracted from its fruit and its shell is powdered to get their physical and chemical properties.





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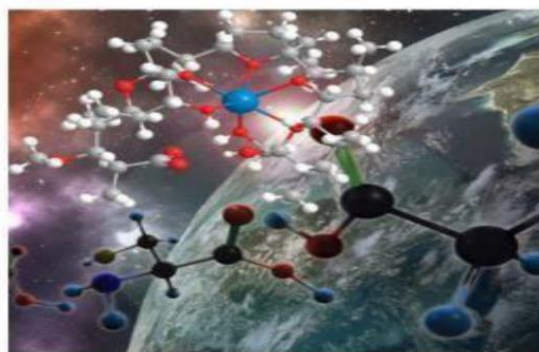


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A REVIEW ON ZNO BASED NANOCOMPOSITES: INFLUENCE OF OPTICAL & PHOTOLUMINESCENCE PROPERTIES FOR FLUORESCENCE APPLICATIONS

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Abstract

The various optical and photoluminescence properties of ZnO based nanocomposites have fluorescence applications. Literature survey revealed that the ZnO/CuO nanocomposites synthesized through sol-gel method acquired Optical and photoluminescence properties. It had been reported in literature that ZnO/CeO₂ nanocomposites which were synthesized by a facile and low cost one-pot hydrothermal method displayed higher fluorescence emission with the increasing Ce/Zn molar ratio; the band gap of ZnO/CeO₂ decreased from 3.25 to 3.08 eV when Ce/Zn atom molar ratio was increased from 0 to 0.08. These composites could become UV absorber materials and transparent material in the visible region. Literature survey also showed that Graphene-ZnO nanocomposites were prepared by chemical method. Optical absorption at 369 nm ($E_g = 3.36$ eV) where photoluminescence (PL) intensity of the nanocomposites had decreased drastically, due to quenching of photoemission, in the presence of graphene. It had been reported in literature that ZnS-ZnO nanocomposites prepared through the hydrothermal route indicated that the intensity of deep level states in the wavelength ranged from 380 nm to 550 nm in the PL spectra. This paper reviews the state of the art of research on the effects of optical and photoluminescence properties for fluorescence applications.

Keywords : ZnO nanocomposites, Photoluminescence, Optical, Fluorescence

1. Introduction

In recent years, nanotechnology research has gained great attention by offering innovative solutions in the fields of materials science, electronics, and medicine. [1-3]. These unique properties of nanomaterials are mainly responsible for their wide use in various biomedical applications, such as nanomedicine [4-6]. Zinc oxide (ZnO) has been widely examined because of its excellent properties, including low cost, high redox potential, nontoxicity, and environmentally friendly features [7-11]. Although ZnO yields a wide band gap (3.37 eV) and a high exciton binding energy (60 meV) [12]. ZnO is commonly used in several devices such as light-emitting diodes [13], optoelectronics [14], field-effect transistors [15], and transparent films [16]. The optical properties of ZnO nanoparticles can be improved by encapsulating it with wider bandgap semiconductor nanoparticles [17-19]. PL spectra, blue and green emission was observed in the samples. UV-vis spectra revealed the absorption peaks of NiO nanoparticles and their nanocomposites [20]. The UV-Vis analysis reveals strong absorption peaks in the visible region [21].

2. Properties of ZnO

2.1. Photoluminescence of ZnO Nanoparticles

ZnO on its own luminesces in the visible and UV regions. In the visible region the emission is attributed to intrinsic defects induced during the synthesis itself. The UV emission is due to excitonic recombination [22,23]. Depending on the synthesis process, morphology, vacancies, and surface imperfections, different luminescence emissions in the visible area are conceivable. [24]. The ZnO nanoparticles in a metal oxide matrix produces differences in the PL response due to the passivation of the surface defects [25]. Various colored emissions have been obtained for ZnO: orange [26], blue [27], green, and red [28].





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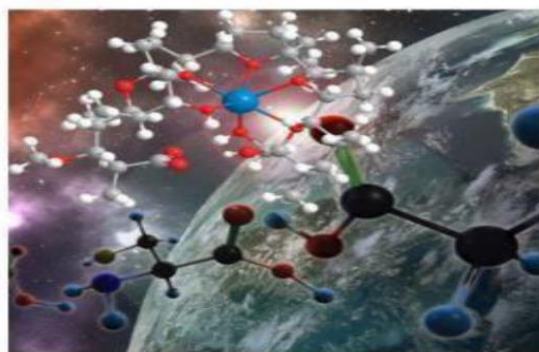


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Abstract

Cadmium oxide (CdO) is an n-type semiconductor having bandgap 2.5 eV with outstanding optical, electrical, antibacterial, chemical, and catalytic properties. Literature survey revealed that CdO-MgO nanocomposites were synthesized and investigated using various spectroscopic techniques. The antimicrobial activity of prepared nanocomposites was scrutinized against food borne pathogens. It was reported that the CdO-CuO nanocomposites were generated by a microwave-assisted process and examined by employing different spectroscopic methods. Antimicrobial activity of the CdO-CuO nanocomposites was checked alongside human pathogens (*S. aureus* and *S. typhi*) and reported with higher antimicrobial performance against *S. aureus* at a concentration equal to 100 µg/mL. The antibacterial activities against *S. aureus* and *K. pneumonia* bacteria strains and NiO-CdO nanocomposites synthesized by a simple soft chemical route were reported in literature. CdO based nanocomposites exhibit a wide range of bactericidal activities against gram positive and gram negative strains because of the potential to penetrate pathogen's membrane and change metabolic activity, eventually leading to cell death. In this work, research progress on the antibacterial properties of cadmium oxide (CdO) based nanocomposites is reviewed.

Keywords: Cadmium oxide (CdO), Antimicrobial activity, Nanocomposites

1. Introduction

Nanoparticles have a high surface to volume ratio, which increases chemical activity. Consequently, nanoparticles having antibacterial qualities are more effective [1]. Due to the rise of bacterial strains that are resistant to some powerful antibiotics, research on nanomaterials as effective antibacterial agents is necessary [2]. The bactericidal activity of nanoparticles is affected by particle size. Bacterial population growth is inhibited due to the particles' smaller size than bacterial pores (70-100 nm). They have the unique ability to cross the cell membrane and are powerful enough to inhibit bacterial growth [3]. However, the application of certain antimicrobial materials has been restricted due to their toxicity. Inorganic antibacterial factors have a very high bacterial resistance and thermal stability. It has been demonstrated that specially formulated cadmium oxide based nanocomposites have good antibacterial activity, and antimicrobial formulations comprising nanocomposites could be effective bactericidal materials [4].

2. Cadmium Oxide Nanoparticles

Cadmium oxide (CdO), n-type semiconductor has optical bandgap (2.2–2.5 eV), high electrical conductivity and low electrical resistivity. CdO has possible applications in the field of optoelectronics, gas sensors, photovoltaic cells, and biology [5]. CdO is an interesting substance with probable applications in the field of photocatalytic degradation, electronics, plasma display screens, drug delivery, and removal of pollutants from water [6]. The brown CdO Nanoparticles are generally formed by the burning of Cd in air. It absorbs CO₂ from air and can be reduced to the conducting oxides. However, some of the common drawbacks of CdO NPs include the relatively low conductivity, poor dispersibility and high recombination rate of the photo generated electron hole pairs. Therefore, to overcome such challenges, the CdO nanoparticles have been employed with the different hetero substances including metal, metal oxide, polymers etc [7]. Natural sources like microorganisms and plant extracts have been a source of inspiration for designing cadmium complex nanomaterials with higher surface area and potent applications. CdO also finds application in photocatalysts for dye degradation due to its favorable visible light absorption and high charge carrier mobility [8].



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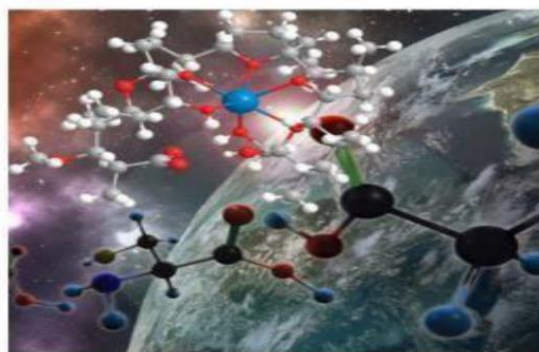


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CHARACTERIZATION OF MORPHOLOGICAL AND STRUCTURAL PROPERTIES OF NEW NATURAL CELLULOSIC FIBER FROM ACACIA PENNATA

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Abstract

The aim of current work is to access the structural characteristics of Acacia pennata natural fibres using techniques like powder X-ray diffraction, surface morphology, and Fourier transform infrared spectroscopy (FTIR). Powder X-ray diffraction analysis was used to investigate the AP fiber's crystalline nature. Morphological studies showed that the surface roughness of Acacia pennata natural fibers. FTIR spectroscopic analysis were done and the results showed the evidence of positive reactions. Natural fibre reinforced polymer composites are widely used in a variety of applications, including furniture, packaging, and building supplies.

1. Introduction

Natural fiber is a term used to describe fibers obtained from (or produced by) animals and plants. These fibers have numerous applications in the production of composite materials. The natural fibres are not only renewable and biodegradable but they also have several other benefits such as reduced mass, improved strength, low cost, high modulus, reduced machine wear and safe manufacturing process [1-2]. Currently, natural fibre-reinforced polymer bio-composite has found application in automobile industries [3]. Natural fibres are lignocelluloses, which render the fibre extremely hydrophilic in nature and incompatible with most polymer matrices that are hydrophobic, thus resulting in inadequate fibre saturating into the polymer matrix and poor attachment of the fibre/matrix interface [4]. This work is an attempt to the extraction process of Acacia pennata (AP) plant fibers and characterize them by studying their morphological and structural properties.

2. Materials and methods

2.1 Materials

Acacia pennata plant fibers, distilled water, sodium hydroxide pellets (NaOH) which was purchased from premier chemicals, Nagercoil, Tamilnadu, India.

2.2 Methods

The Acacia pennata (AP) plant collected from Tamilnadu, in India. APFs were extracted from the stems of the plant as shown in Figure 1. Barks were immersed in water about three days for water retting. The inner layer of the stem yielded fine fibers. The separated fiber strands were washed thoroughly using distilled water and then these fibers were dried at room temperature for two days.

2.3 Fiber extraction process

The dried fibers were soaked in distilled water for 20 minutes for microbial degradation, to be occurred in the fiber straps. After 20 minutes, the soaked fiber sections were taken out and using the metal comb, the fibers were extracted from it. The pull out fibers were allowed to dry at room temperature for 7 to 10 days. The same amount of AP fibers has been taken for alkali (NaOH) treatment. The fibers were dipped into the solution which has made from 0.1molarity of NaOH with distilled water. After 20 minutes, the alkali treated fibers has taken out and allowed to dry at room temperature for about two to three days. The dried fibers were packed in zip-lock cover based on the need for analysis. Fig 1 represents the images of an Acacia pennata plant and its extraction process.





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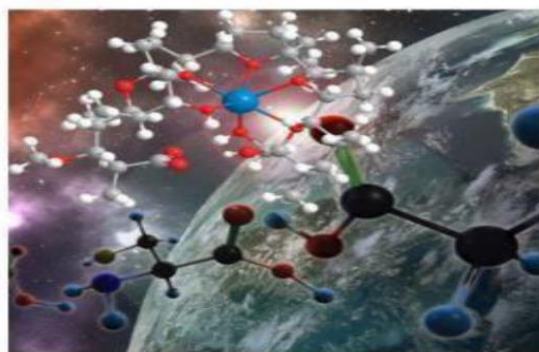


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CHEMICAL ANALYSIS ON SODIUM CARBONATE (Na_2CO_3) TREATED BUTEA PARVIFLORA FIBER FOR GREEN COMPOSITES

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Abstract

Sustainable environment is an immediate require to safeguard the planet from being exposed to vulnerabilities. Bio composites can minimize synthetic acquisition since they are easily degradable. The reinforcement material deployed is a plant fiber according to which the entire behaviour of composites are decided. Natural fibers are endorsed as reinforcements owing to their reasonable behaviour like high specific strength, light weight and degradability. The present work concentrates on the sodium carbonate treatment on Butea parviflora fiber and to analyse its chemical contents for composite applications. Chemical treatments greatly lower the amorphous content from the fiber surface. Cellulose content of 50% was present in the Na_2CO_3 treated fiber with a lowered hemicellulose content of 34.8%. The availability of moisture was noted to be 11.53%. Lignin content was found to be 15.8%. Lowered amount of wax (0.26%) give a good compactivity between the reinforcement and matrix while introducing the fiber for composite making.

Keywords: Natural fibers, chemical treatment, cellulose, composites

1. Introduction

Technological development fetches useful products along with waste which are mostly non biodegradable. Composite materials pairing natural fibers as reinforcement material could be the best solution to stabilize the production of synthetic waste. Plant fibers contain crystalline and amorphous constituents. Cellulose that impart a great part of crystalline nature to the plant is responsible for tensile and thermal stability. Before considering fibers for any reinforcements, it is essential that the fibers must be analysed for its chemical constituents [1]. Chemical treatments can help in improvising the orderness of fiber. Analysing the chemical constituents of fibers along with suitable treatment would enhance the overall behaviour of fiber composites[2].

2. Materials and methods

Butea parviflora (BP) is a climber belonging to the family Fabaceae. It can reach upto a height of few meters. The outer skin of the climbing branches is peeled for fiber. The fibers are immersed in 0.1 M of sodium carbonate solution for 30 minutes under room temperature and pressure. Soaked fibers are rinsed with water to wipe away the carbonate components adhered on the surface. Fibers are dried in shade and placed in vacuum desiccator to ensure complete drying. Dried fibers are finely powdered and chemical analysis are proceeded. The chemical analysis of Butea parviflora fiber was taken from SITRA, Coimbatore.

3. Chemical constituents

3.1 Cellulose

The mechanical stability of green plants is highly ensured by the presence of cellulose. Cellulose content of 50.1% was calculated for the treated BP fiber, with a lowered wax content of 0.26%. It is considered to be the most abundant organic compound on Earth. The molecular formula $\text{C}_6\text{H}_{10}\text{O}_5$. Cellulose crystallites are linked together by amorphous entity, hemicellulose. Holocellulose is a combination of cellulose and hemicellulose. Hemicellulose have an amorphous structure with



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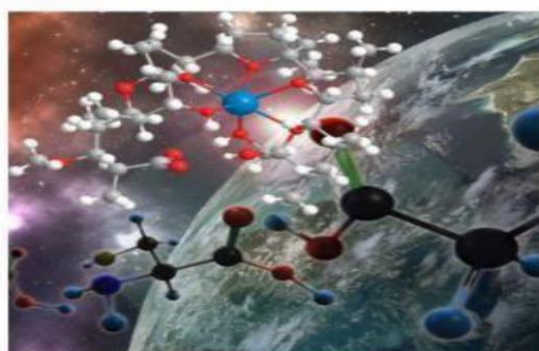


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EFFECT OF STRUCTURAL AND MORPHOLOGICAL PROPERTIES OF CeO₂ BASED NANOCOMPOSITES IN WASTEWATER TREATMENT APPLICATIONS- A REVIEW

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ABSTRACT

CeO₂ based nanocomposites are the most promising material in wastewater treatment which is determined by their structural and morphological properties. Literature survey revealed that CeO₂-CdO binary metal oxide nanocomposites were synthesized by a simple chemical precipitation and hydrothermal method. XRD pattern proved that the final product had cubic phase and the particle size diameter of the nanocomposites were 27 nm indicating that the crystalline properties of the nanocomposites were improved without affecting the parent lattice. FESEM analysis indicated that the product is composed of spherical particles in clusters. The IR results showed high purity of products and indicated that the nanocomposites were made up of CeO₂ and CdO bonds. These nanocomposites can be used for photo degradation of dyes in wastewater. Literature survey revealed that, Sn doped CeO₂-Fe₂O₃ nanocomposites were synthesized through a thermal decomposition method and then applied for the photocatalytic degradation of Sudan I dye. XRD pattern was observed that the doped Sn was well incorporated into the structure, but a shift in 2θ was observed towards the high 2θ values. The FESEM result showed the sphere-shaped morphology of the catalyst in the range of 1-2 μm in size. Literature survey revealed that CeO₂/Y₂O₃ nanocomposites were successfully synthesized by hydrothermal method. The XRD patterns represented that the crystallite sizes of pure CeO₂ /Y₂O₃ nanopowder were 12 nm respectively. The band around 1530 cm⁻¹ which could be assigned to the bending vibration of water molecules in FTIR spectra. SEM image of the nanocomposite clearly showed that there was no aggregation and agglomeration of particles which suggested that yttrium particles were well dispersed in the needle shaped ceria matrix. The yttrium atoms were well and consistently dispersed in the cerium matrix. This paper reviews the formation of unique morphology for the CeO₂ based nanocomposites which can be useful for wastewater treatment applications.

1. Introduction

Rare earth metal oxides are quite interesting materials because of their unique optical, electronic, magnetic, and catalytic properties due to the confinement of the 4f electrons [1]. All these properties lead to many practical applications, such as optical communication, optical displays, efficient catalysis, UV shielding, and medical diagnostics [2]. Among the all rare-earth oxides, CeO₂ having wide band gap of 3.2 eV utilises UV light which covers only a small part of solar energy [3]. Hence it leads to low quantum efficiency which intern effect its large-scale applications [4]. Ceria is a favourable has been assessed for many technological applications such as catalysts, fuel cells, UV blockers, solar cells, oxygen storage capacitors and sensors [5]. Cerium oxides act as a better heterogeneous catalysis and possess both electron and proton transfer abilities, which can be used as catalysts in redox as well as acid-base reactions. The effective surface area and total number of active sites of the catalyst determine the reaction rate. [6, 9].

1.1 Properties of CeO₂

Ceria based ceramic nanomaterials attracted great interest recently, due to its properties like high refractive index, wide band gap, high dielectric constant and high melting point [10, 11]. These excellent properties emerge from the fact that the ionic and charge ratio between Ce⁴⁺ and O²⁻ ions allow for the changes in the CeO₂ structure which is a most available inner transition metal oxide (ITMO). CeO₂ nanoparticles are relatively nontoxic and least expensive rare earth metal oxide to neutrophils and macrophages, hence, these particles protect cells from death due to oxidative stress. [12]



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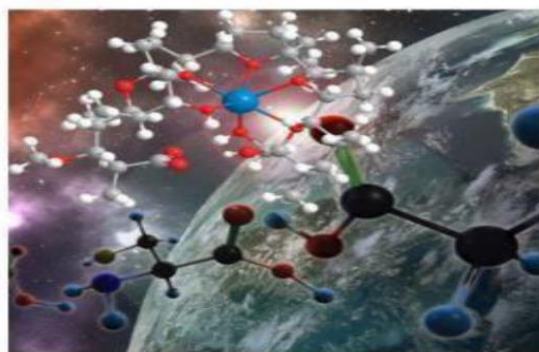


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EXTRACTION OF HYDROXYAPATITE FROM FEMUR BONE OF TURKEY FOR MULTIFUNCTIONAL APPLICATIONS

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Abstract

Biomaterials are an excellent replacement for conventional materials utilized in numerous biological applications because of their low or insignificant toxicity to people. Hydroxyapatite is an interesting bioceramic material widely used in biomedical applications due to its bioactive properties. Hydroxyapatite can be synthesized in numerous ways, however due to environmental friendly and non-toxic properties; extraction from natural sources could be a better replacement for chemically synthesized HAp. In this work, Hydroxyapatite is extracted from femur bone of turkey using simple calcination method. Structure and crystallite size of the material was analyzed using XRD analysis. The morphology of the material was studied using Scanning Electron Microscopy in which the average particle size was found to be 0.6 μ m. This naturally extracted Hydroxyapatite biomaterial can be an alternate source to potentially harmful compounds.

Keywords: Hydroxyapatite, bioceramic, biomaterials, biomedical

1. Introduction

For use in the biomedical field, researchers are now concentrating on creating novel biomaterials or altering the structure and properties of those that already exist. Typically, biomaterials are created to perform a certain task for a portion of our body without harm or adverse effects. The bone and teeth in our bodies are made of natural ceramics. Collagen fibres, an organic component of bone, and hydroxyapatite, an inorganic substance, make up bone. The Ca apatite family's hydroxyapatite (HAp), which has a Ca/P ratio of 1.67 and a hexagonal shape, is an appealing bioceramic material that occurs naturally. Its chemical formula is $\text{Ca}_{10}(\text{PO}_4)_6(\text{OH})_2$ [1].

Both chemical and natural sources can be used to create HAp. The majority of researchers choose natural sources over chemically produced HAp because they are environmentally safe, less expensive, and less likely to cause infections or other negative effects on our bodies. Natural hydroxyapatite production can come from a variety of sources, including plant, mammalian, shell, marine, and mineral sources [2]. In this work, HAp is synthesized from bone wastes of turkey. It is important to note that, after the meat has been eaten, this form of bone provides a readily accessible natural supply of HAp.

2. Experimental Procedure

The Femur bone of Turkey was collected, cleaned and boiled in distilled water in order to remove the fleshy parts, bone marrow. Then the bones were dried in oven for 24 hours to eliminate water content and other organic components. Finally Hydroxyapatite (HAp) is obtained by calcination of oven dried bone at 900°C.





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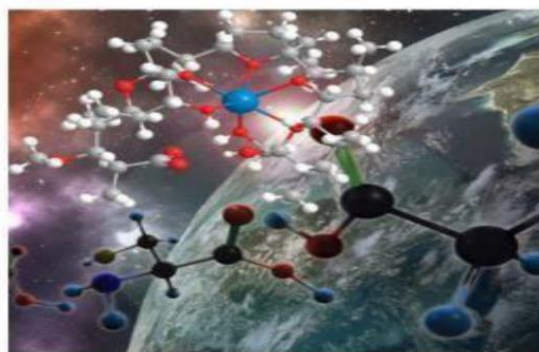


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PHYSICO-CHEMICAL AND STRUCTURAL ANALYSIS OF BORASSUS FLABELLIFER (Bf) FIBER

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Abstract

Humans have been using composite materials for thousands of years. The vital reason for composite material selection is the versatility in their properties which are, a specific strength, high temperature resistance, high specific modulus, low thermal conductivity as compared to other traditional materials. Conservation of raw materials, for instance natural fibres has imposed composite industry to explore and monitor eco-friendly components. Bio composites can minimize synthetic acquisition since they are easily degradable. The reinforcement material deployed is a plant fiber according to which the entire behaviour of composites are decided. Raw and steam treated fibers of BorassusFlabellifer (Bf) peels are characterised to see its efficiency as a reinforcement material. Lowered density of 0.91 g/cc is achieved after steam treatment. Chemical analysis computed the cellulose content to be 58.3%. Crystalline parameters are found from XRD analysis. The findings support the use of fibre as a reinforcement material in composite construction. All of the evidence suggests that Bf fibre could be a viable reinforcement material for light weight composite applications.

Key words: Borassusflabellifer (Bf), Physico-chemical properties, low density fiber, XRD

1. Introduction

Addressing the environmental crises with sustainable solutions that can adapt efficiently to the needs of emerging architectural technologies while preserving nature is receiving increased attention. Composite materials pairing natural fibers as reinforcement material could be the best solution to stabilize the production of synthetic waste. Natural fibres are prioritised in reinforcements due to their lower mass percentage and density. Before considering it for any reinforcements, it is essential that the fiber must be properly brought out with lowered amorphous entity [1]. Various chemical treatments like alkalisation, benzoyl, carbonate, silane, permanganate treatments etc., can help on improvising the orderliness of fibers [2]. The current study focuses on Borassusflabellifer (Bf) to investigate its physical, chemical and structural properties through powder X-ray diffraction techniques.

2. Materials and Methods

2.1 Materials used

Borassusflabellifer (Bf) fiber locally called palmyra tuber are collected from Nagercoil, Kanniyakumari. It is also considered to be a nature's perennial gift that could flourish well in arid and semi-arid conditions and also could withstand any adverse climatic conditions.

2.2 Methods

2.2.1 Experimental techniques

The outer skin of Bf tuber is generally treated as a waste and useful fibers can be separated from various layers. Selected fibers are washed in distilled water under room temperature and a part of it are subjected to steam treatment maintained at 110°C for 1 hour. Fibers separated using needle are



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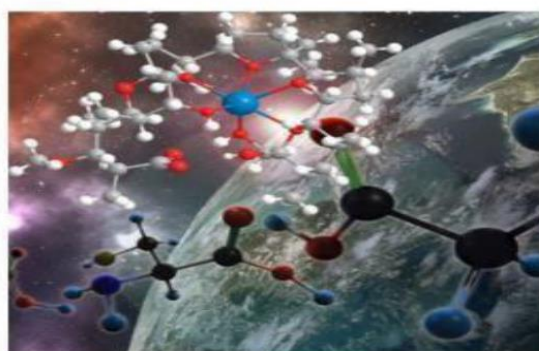


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IMPACT OF SURFACTANTS ON HYDROTHERMALLY SYNTHESIZED VANADIUM-PENTOXIDE NANOPARTICLES

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Abstract

Ammonium metavanadate was used as precursor in a hydrothermal method that produced vanadium pentoxide nanoparticles that were anionic, cationic, and nonionic. The synthesized nanoparticles were characterized by using powder X-Ray Diffractometer, Scanning Electron Microscopy with Edax and UV-Vis spectroscopy. Crystalline nanoparticles were formed using different surfactants like Sodium Dodecyl Sulphate (SDS) and Cetyltrimethyl ammonium Bromide (CTAB). The size of as-prepared nanoparticles was around 45 nm. FESEM images established V₂O₅ nanoparticles have good structural and morphological stability. The EDX spectrum confirms the elements present in the sintered samples are V and O. Electrochemical impedance, and Chronocoulometry studies revealed a good capacitive and charge-discharge behavior of the prepared V₂O₅, which is very promising for the application for next-generation high-performance electro-chemical supercapacitors.

Keywords: V₂O₅, Nanoparticles, XRD, confinement and FESEM

1. Introduction

V₂O₅ has been gained significant interest in the applied research to range of applications [1]. V₂O₅ is the most stable among all vanadium oxides and has high oxidation state [2, 3]. Transition metal oxides have been a subject of research in recent years in view of their fundamental and technological aspects. Among these, vanadium creates many compounds with oxygen; these have different structural, optical and chemical properties. Meaningful differences between the properties of different phases of vanadium oxides like VO, VO₂, V₂O₃ and V₂O₅ depend on their structure, which determines other properties [4,5]. Vanadium pentoxide (V₂O₅) is a thermodynamically stable form which exhibits electrochromic properties. In this article, vanadium pentoxide nanoparticles are fabricated by using hydrothermal method. Structural and surface morphological properties have been studied. The antibacterial activity of V₂O₅ with SDS surfactant against gram positive bacteria demonstrates good response.

2. Result and Discussion

2.1 XRD Analysis of Pure V₂O₅ Nanoparticle

The average grain size of V₂O₅ nanoparticles has been estimated from full width at half maximum (FWHM) and the crystalline size was calculated with the help of Debye-Sherrer formula, which is given as

$$D = 0.9\lambda/\beta \cos \theta$$

Where, D is the crystalline size, β is the full width at half maximum (FWHM) of the most intense diffraction peak in radiance, θ the diffraction angle and λ the wavelength of X-ray radiation. Here using different



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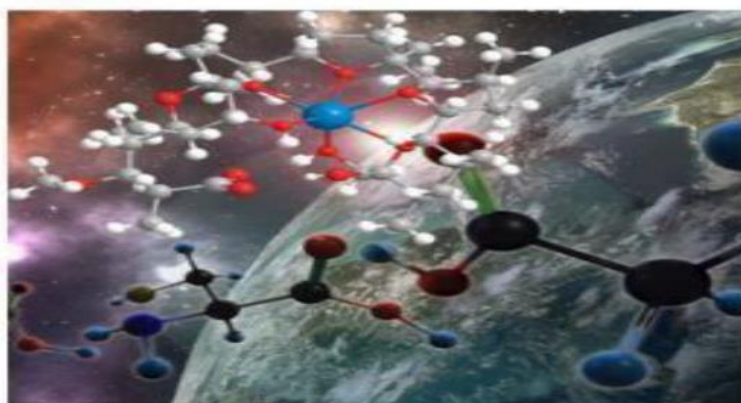


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STUDY ON CARBON PRODUCED FROM BIOPOLYMER CONSIDERING WASTE MANAGEMENT

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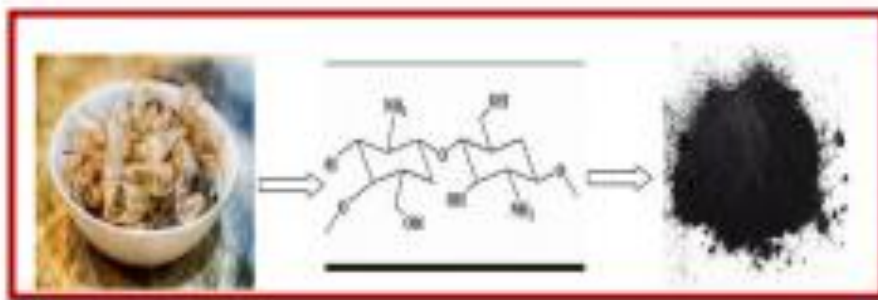
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Abstract

Sea food is a source enriched with nutrition, takes a major role in daily diet of human. During the processing of food, huge quantities of waste can be ported from the industry which cause health and environmental hazards. This research work is on waste management of such one; the shrimp shell collected from locality of specific area. Aim of work is to achieve the material with enhanced property in low cost and non-toxic. The shrimp shell is initially treated in chemicals to remove the mineral and protein content. Thus, obtained biopolymer chitosan is pyrolyzed to produce the carbon. At 450°C the chitosan derived carbon yield was maximum, observed from weight loss percentage and this was confirmed from CHNS analysis. The optical property of obtained material was studied from photoluminescence. The dynamic light scattering and zeta potential were also found to know the size of particles and stability of yielded carbon from biomass. The size of obtained material is bulk was observed from dynamic light scattering.

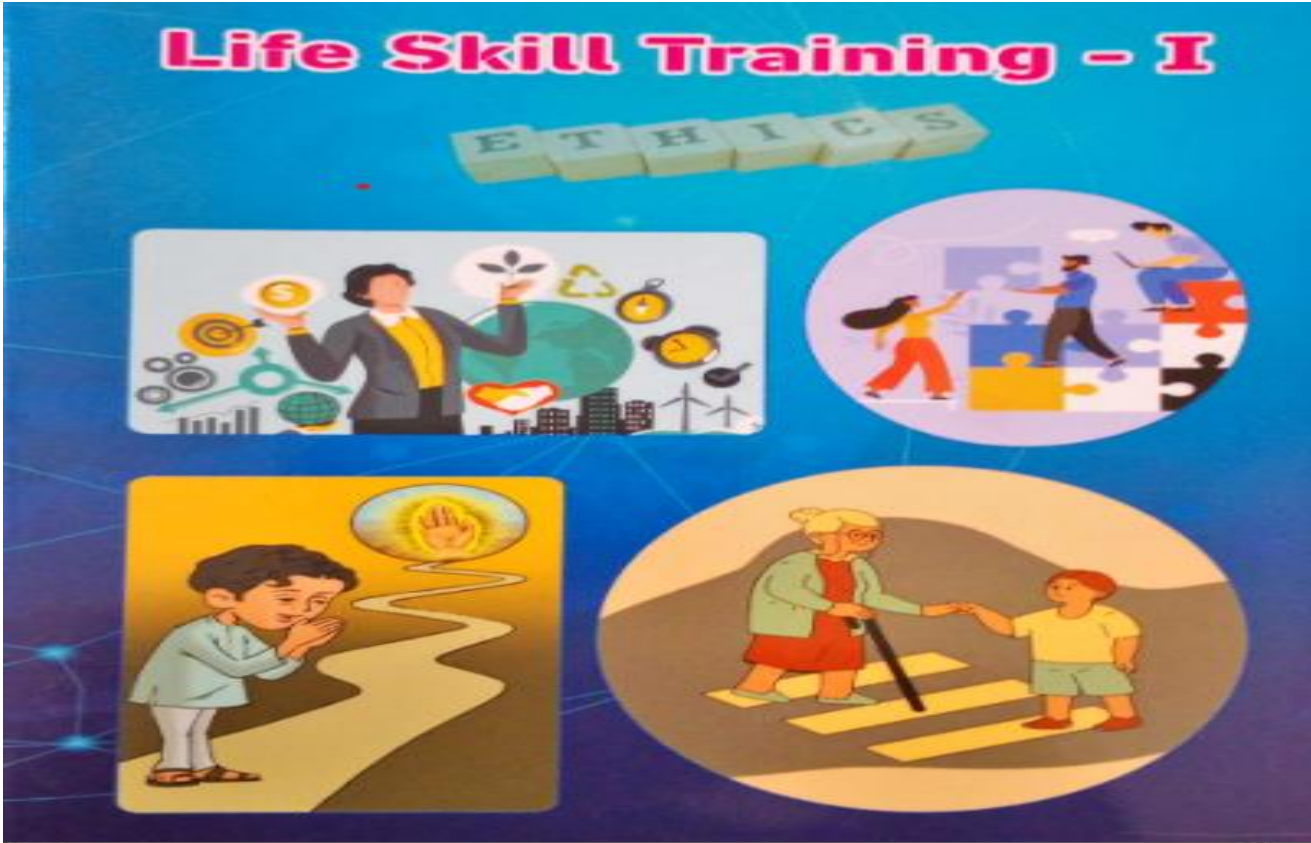
Keywords: Carbon; CHNS; Particle analysis; Zeta Potential; Photoluminescence

Graphical Representation



1. INTRODUCTION

Aquaculture produced food is rich with nutrition and taking major role in economy of small- and large-scale industries in many countries. While the processing of sea food, enormous wastes was generated and the direct discharge may lead to cause contamination of microorganisms. Being the untreated wastes fill the land, the shrimp shell has multipurpose usages, rich with nutrients which can be utilized as feed for animals, resource for agriculture and the source of bioactive compounds (polymer) (Adeleye et al., 2019). Such one form of utility of shrimp waste is the conversion to activated carbon. The activated carbon, carbon-based framework from biochar is attracted by researchers to get a material with efficiency, as adsorbent and in filter membrane etc. Several works in shrimp shell-based chitosan derived carbon are under process to achieve the graphite, graphene, nano 2D, 3D structures. The purity, stability, optical properties, non-toxic, good biocompatibility and crystallinity are the necessary factors which has been concentrated in production of carbon (Salawa et al., 2022). Here, concentrating the above factors the material is produced in low cost and the basic properties were analyzed.



Life Skill Training - I



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-
- Ms. M. Maria Helen Janobs
 - Dr. S. M. Cokila S. George
 - Dr. S. Sebastiammel**
 - Ms. Sivalakshmi Thomas George

Values are like lightness; they are
signals giving us direction, meaning
and purpose
_Anonymous



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Life Skill Training - II



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Dr. Selva Mary Gokila S. George

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Ms. Selva Mary Pratha George





“The value of life is based on how long we live, but how much we contribute to others in our society”.

- BUDDA



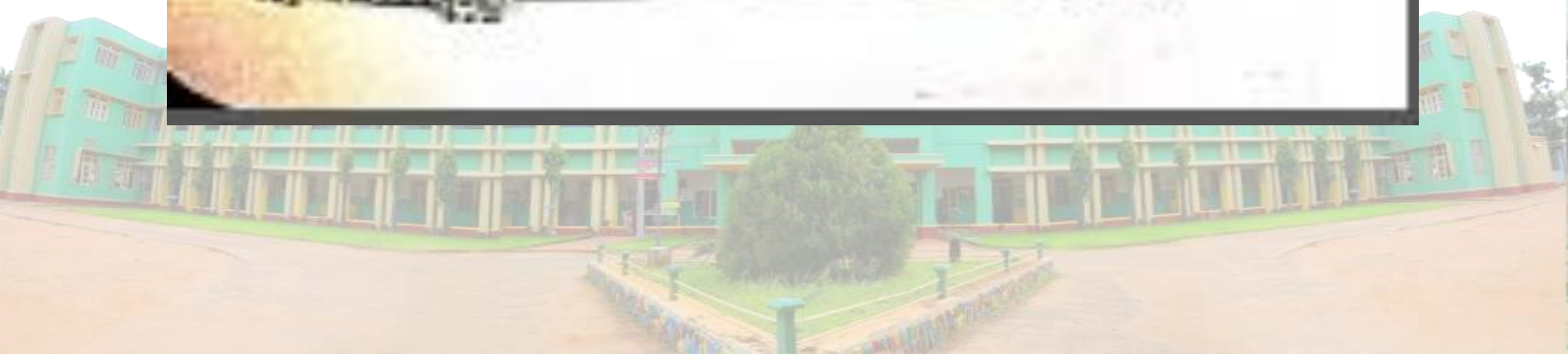
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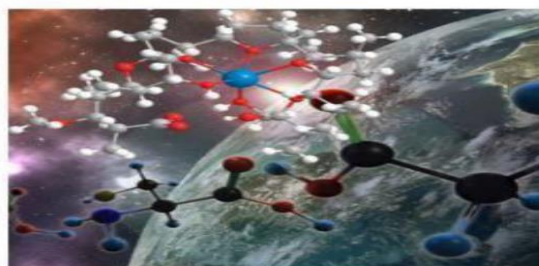


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Floral Surfaces of NiO Nanostructured Thin Films: Successive Ionic Layer Adsorption and Reaction (SILAR) Method

Penila Saminy. P^a S. Sonia^{b*}

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Abstract

Nickel oxide is one of the interesting P-type semiconductors. SILAR is a simple and versatile method used to prepare large-area NiO thin films. In my present work, Nickel oxide thin films have been successfully deposited on a glass substrate by successive ionic layer Adsorption and Reaction (SILAR) method on a glass substrate at room temperature for 80 cycles followed by annealing at 400°C for 2 hours. The structural and morphological properties were analyzed. Thin films were characterized by X-ray diffraction (XRD), Scanning Electron Microscopy (SEM), and Energy Dispersive X-ray (EDX) analyses.

Keywords: SILAR, NiO, 80 deposition cycles, XRD, SEM, and EDX.

1. Introduction

Recent years have seen a great deal of interest in nanostructured materials due to their distinct physical and chemical properties compared to those of bulk materials. Nickel oxide (NiO) stands out among them because of its unique characteristics and wide range of uses [1]. NiO is a viable contender for p-type transparent conducting oxide films with a band gap energy ranging from 3.6 to 4.0 eV and a simple cubic structure. The ability to manufacture NiO using several methods makes it particularly alluring due to its great chemical stability, outstanding durability, low material cost, and potential as an ion storage material for cyclic stability [2]. More desirable qualities than those of conventional materials, such as very small particle size, sizable exposed surface areas, and high surface energy, are displayed by nanostructured materials. Metal oxides' high porosity, nanostructure, and particle size are all somewhat related to the material's surface and its gas-sensing capabilities [3]. Several

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Nickel oxide is one of the interesting P-type wide band gap semiconductors with excellent electrical and optical properties.^{1,2} Nickel oxide thin films are known to be a multifunctional material because of its applications in various fields especially in the field of high sensitive sensors.³ In the present work Nickel oxide thin films have been grown by successive ionic layer Adsorption and Reaction (SILAR) method on glass substrate at room temperature followed by annealing at 400°C for 2 hours. The effect of annealing temperature on the structural and morphological properties were analyzed. Nickel oxide thin films were characterized by X- ray diffraction (XRD), Scanning Electron Microscopy (SEM) and Energy Dispersive X-ray (EDX) analyses. The crystal structure, surface properties and growth mechanism of nickel oxide thin films were studied in detail.

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PP 13

Effect of Temperature and Demineralization on the Degree of Deacetylation of Chitosan from Squid pens

Jasvy, S^a, Annlin Bezy, N^b, S. Virgin Jeba^c, Lesly Fathima, A^{d*}

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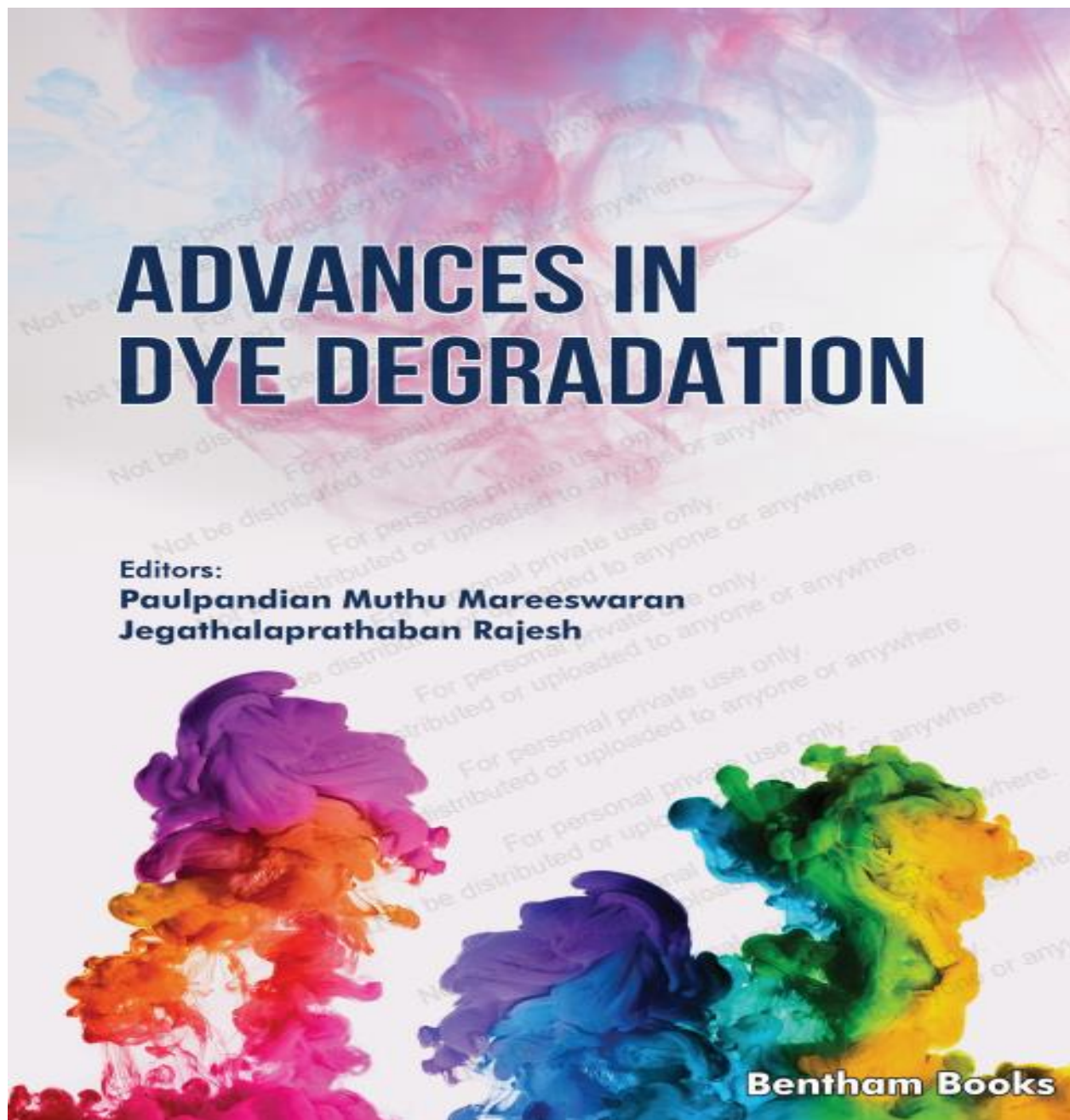
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Chitin being the second most available polysaccharide,¹ is the raw material for the production of chitosan, one of the most versatile materials whose applications span a wide range. One main issue in relation to the implementation of chitosan is its Degree of Deacetylation (DD) which determines the solubility of the material. Achieving chitosan with higher DD has proven to be a challenge till date. Demineralization is one amongst the many steps used for the production of chitosan, this step can also be found to be left out in some production processes, due to the near absence of any minerals in squid pens.² But other works claim that the process is a necessity.³ This work is a study on the effects of the demineralization process especially on its influence on the Deacetylation Degree. Similarly some researchers suggest the inclusion of temperature into the production methods provide better DD% of chitosan. These properties have been studied by analyzing chitosan samples



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CHAPTER 1**Dye Degradation - Basics and Necessity**

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Abstract: Without colour, life is incomplete. Dye refers to the compounds that give goods their colour. Even though natural dyes have been used for generations, their limitations have led to the development of synthetic dyes. By addressing the history and significance of natural dyes, the limitations of natural dyes, the introduction of synthetic dyes, the negative effects of synthetic dyes, and an overview of several techniques used for the treatment of disposed dyes in the environment, this chapter serves as a foundation for the discussion of the entire upcoming book. The goal of this chapter is to provide a brief overview of the need for and the concept of dye degradation.

Keywords: Colour index, Degradation, Natural dyes, Oxidation, Synthetic dyes.

INTRODUCTION

Dyes are coloured substances that adhere to the substrate and give items their colour. Otto N. Witt developed a dyeing theory in 1876 that was based on functional groups like auxochrome and chromophore. According to his idea, certain auxochromic groups, which are responsible for dyeing properties, and certain unsaturated chromophoric groups, which are responsible for colour, are present in all coloured organic compounds (also known as chromogens) [1]. Dyes absorb visible wavelength ranges of radiation, and the appearance of colour depends on the wavelength ranges that are both absorbed and reflected. The term "visible" was created since the human eye can perceive light between 380 nm

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CHEMISTRY RESEARCH AND APPLICATIONS

THE CHEMISTRY OF ELEMENTS

Rubidium, Tellurium, Ruthenium
and Gadolinium



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Chapter 1

An Evaluation of *In Vitro* Antiproliferative and Cytotoxic Activity of Novel Ruthenium (II)-Polypyridine Complexes on SK-MEL-28 and Normal L6 Cell Lines

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Abstract

Ruthenium complexes have shown great potential and have generated interest in the subject of extensive drug discovery efforts and have acted as novel anticancer drugs by overcoming the limitations of cis-platin. The ligands present in the complexes are capable of undergoing DNA intercalation to cause cell death, a property ideal for applications in photoactivated cancer drug design. The superficial spreading of melanomas that lack melanin pigment can be treated by *in vivo* and *in vitro* methods. An increasing number of chemo-preventive agents have been shown to stimulate apoptosis in pre-malignant and malignant cells *in vitro* or *in vivo*. This book chapter provides an overview of *in vitro* antiproliferative and cytotoxic activity of novel Ru (II)-polypyridine complexes on SK-MEL-28 and normal L6 cell lines.

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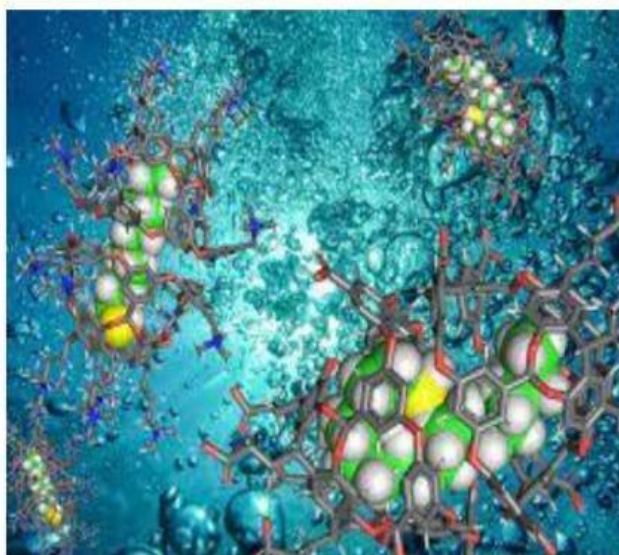
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IN VITRO ANTIPROLIFERATIVE ACTIVITY OF NOVEL RUTHENIUM(II)-BIPYRIDINE-3-BENZOYL PICOLINIC ACID COMPLEX ON SK-MEL-28 CELL LINE¹S.Santhiya, Sheeba DanielDepartment of Chemistry, Holy Cross College (Autonomous), Nagercoil,
(Affiliated to Manonmaniam Sundaranar University, Tirunelveli, Tamil Nadu, India)Email: sheebadaniel@holycrossngl.edu.in**Abstract**

The *in vitro* antiproliferative activity of novel $[\text{Ru}(\text{bpy})_2(\text{bzpic})_2]^{2+}$ ($\text{bpy} = 2,2'$ -bipyridine and $\text{bzpic} = 3$ -benzoylpicolinic acid) complex on SK-MEL-28 cell line has been carried out by direct microscopic method. The morphological changes and percentage viability of the complex on cancerous SK-MEL-28 cell line are determined using MTT assay method. The IC_{50} value of $[\text{Ru}(\text{bpy})_2(\text{bzpic})_2]^{2+}$ complex against the SK-MEL-28 cell line is found to be $39.109 \mu\text{g/mL}$. The IC_{50} values predict that $[\text{Ru}(\text{bpy})_2(\text{bzpic})_2]^{2+}$ complex shows good antiproliferative effect. The results revealed that the percentage of growth inhibition of the cell line is based on dose-dependent manner and this is indicated by the formation of formazan crystal. Hence it is evident that the lower the IC_{50} value of $[\text{Ru}(\text{bpy})_2(\text{bzpic})_2]^{2+}$ complex on cancerous cells exhibit better antiproliferative effect.

Keywords: $[\text{Ru}(\text{bpy})_2(\text{bzpic})_2]^{2+}$ complex, SK-MEL-28 cell line, Direct Microscopic method, Antiproliferative activity

1. Introduction

Transition metal complexes have been extensively studied due to their potential applications in biological processes. Among the transition metal complexes, ruthenium complexes are stable and get easily accumulated in cancer tissues [1]. The most promising biological feature of ruthenium complexes include bio-distribution and are less toxic than that of cisplatin, which is active against tumors [2]. Due to its photophysical properties, charge, solubility and lipophilicity, Ru(II)-polypyridyl complexes act as potential cellular imaging for antitumor drugs, cellular targeting and therapeutic agents. Ru(II)-polypyridyl complexes non-covalently interact with biomolecules and lend themselves to design new therapeutic agents. The overall function of the Ru(II) complexes are determined by the structural nature of the polypyridyl units present in the metal complex [3]. The aim of discovering anti-cancer therapeutics is to arrest the proliferation of cancer cells and to elicit cell death by damaging cells. Thus, the ruthenium complexes have shown great potential and generating interests in the subject of extensive drug discovery efforts and act as novel anticancer drugs by overcoming the limitations [4, 5]. Investigations on the biological activities of Ru(II)-polypyridyl complexes has been made so far and the present study concentrates on the *in-vitro* antiproliferative effect of $[\text{Ru}(\text{bpy})_2(\text{bzpic})_2]^{2+}$ complex on SK-MEL-28 cell line. The morphology of the cancerous SK-MEL-28 cell line at various concentrations of $[\text{Ru}(\text{bpy})_2(\text{bzpic})_2]^{2+}$ complex is carried out by direct microscopic observation method.

2. Materials and Methods**2.1 Materials**

$\text{RuCl}_3 \cdot 3\text{H}_2\text{O}$, bpy , bzpic and NH_4PF_6 were procured from Sigma-Aldrich. HPLC grade solvents were used for the synthesis of the complex. SK-MEL 28 cell line is procured from National Centre for Cell Sciences. The *in vitro* antiproliferative study on SK-MEL-28 cell line was carried out in Dulbecco's Modified Eagles Medium (DMEM, Himedia) supplemented with 10% FBS (Fetal Bovine Serum), L-glutamine, sodium bicarbonate and antibiotic solution containing Penicillin ($100 \mu\text{g/mL}$), Streptomycin ($100 \mu\text{g/mL}$) and Amphotericin B ($2.5 \mu\text{g/mL}$).

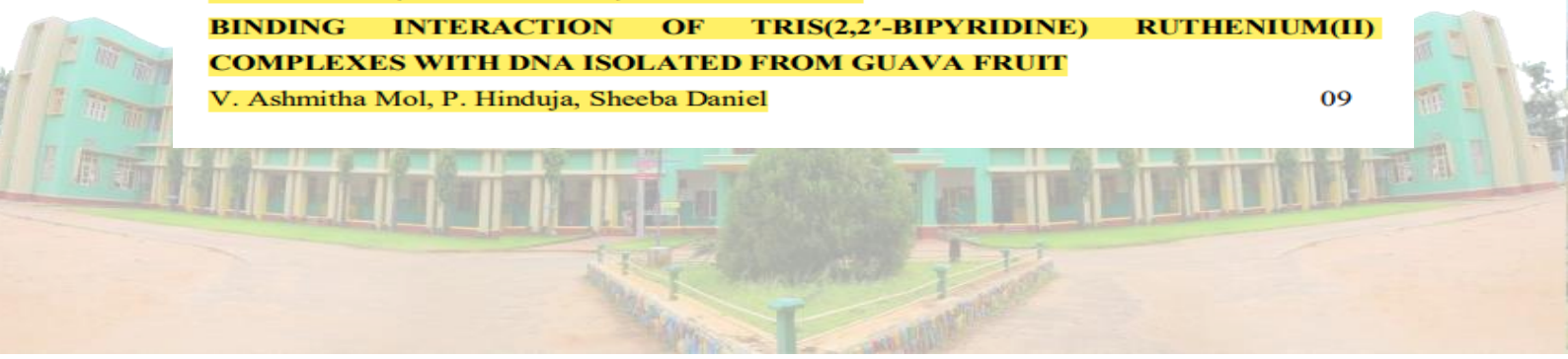
2.2 Synthesis of $[\text{Ru}(\text{bpy})_2(\text{bzpic})_2]^{2+}$ Complex

The $[\text{Ru}(\text{bpy})_2(\text{bzpic})_2]^{2+}$ complex was synthesised by refluxing $[\text{Ru}(\text{bpy})_2\text{Cl}_2]$ and bzpic in 20 mL of methanol for 4 hours under nitrogen atmosphere. The solution was then allowed to cool at room temperature and filtered to remove any insoluble impurities. A saturated solution of NH_4PF_6 was then added dropwise into the filtrate until a dark brown precipitate was formed. The product was filtered, washed with cold water and diethyl ether and further dried in a vacuum desiccator. The complex was purified by column chromatography using silica gel as the adsorbent and a mixture of methanol and dichloromethane (2:8 ratio) as an eluent and subsequent evaporation to recover the complex. Elemental analysis: experimental data C = 63.66 %, H = 3.95 %, N = 9.68 %, O = 11.06 %; theoretical data C = 65.52 %, H = 4.45 %, N =

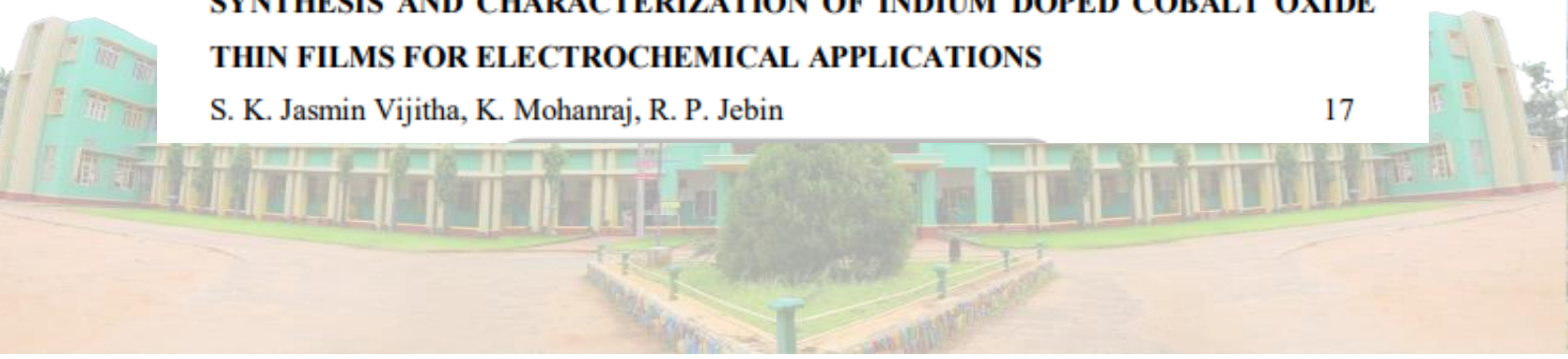


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**SYNTHESIS, CHARACTERISATION AND EVALUATION OF BIOLOGICAL
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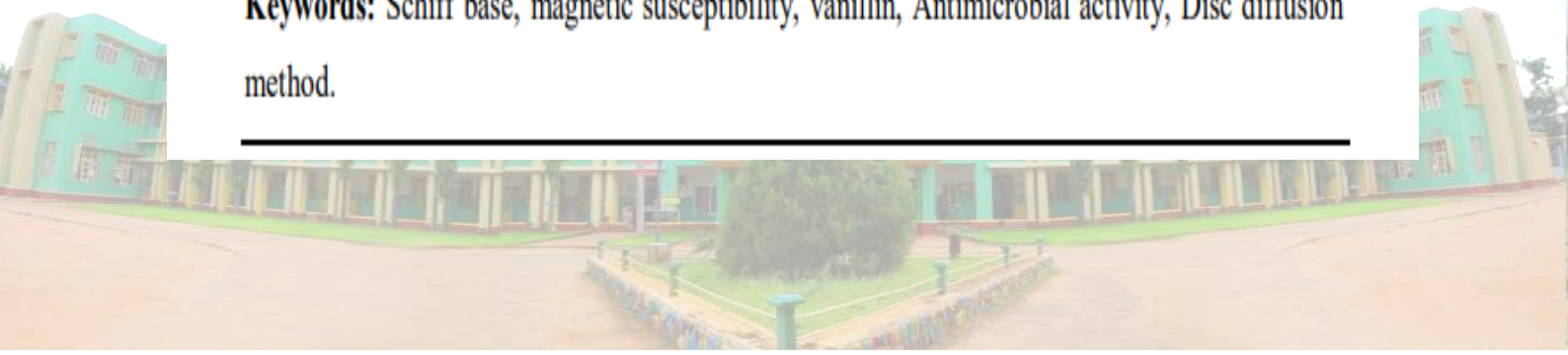
C. Abarna Josephin, N. Ancy Fello, Y. Christabel Shaji*, S. Ajith Sinthuja

Department of Chemistry, Holy Cross College (Autonomous), Nagercoil, Tamil Nadu, India.

ABSTRACT

Metal complexes of Schiff base derived from Vanillin and L-Alanine with the metal ion Ni (II) and Cu (II) have been successfully prepared in alcoholic medium. The complexes obtained were characterized quantitatively and qualitatively by using micro elemental analysis, FTIR spectroscopy, UV-Vis spectroscopy, magnetic susceptibility and conductivity measurements for tentative structure proposal. From the spectral study, ligand contains ONO domains and can bind to the metal ions via the azomethine nitrogen and the carbonyl oxygen atoms. The complexes were obtained as monomeric structure and the metal center moieties are six-coordinated with octahedral geometry. The preliminary in vitro antibacterial screening activity revealed that complex showed better activity against tested bacterial strains and slightly higher compared to the ligand.

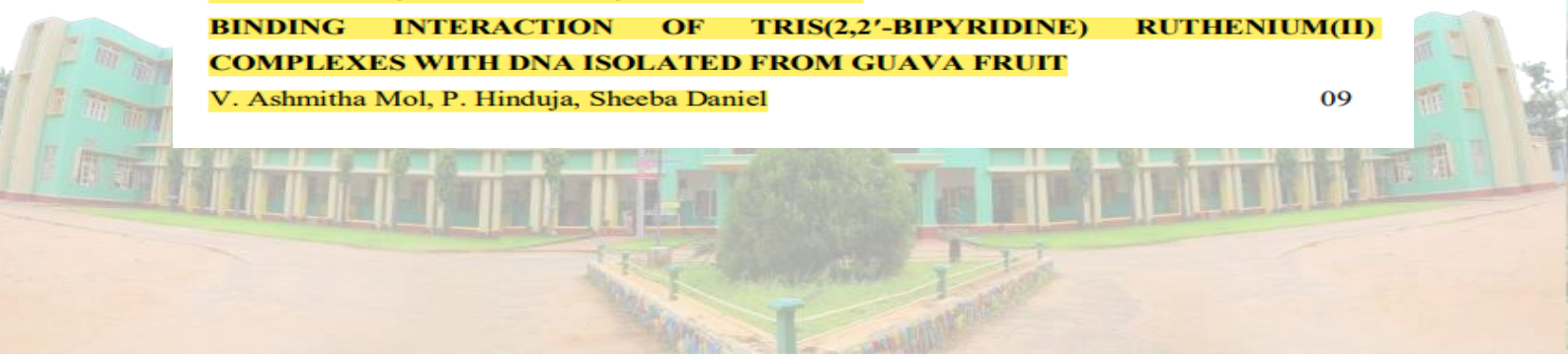
Keywords: Schiff base, magnetic susceptibility, vanillin, Antimicrobial activity, Disc diffusion method.





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THE IMMOBILIZATION OF BIMETALLIC CUNI NANOPARTICLES INSIDE THE PORES OF METAL-ORGANIC FRAMEWORKS (MIL-101)

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ABSTRACT

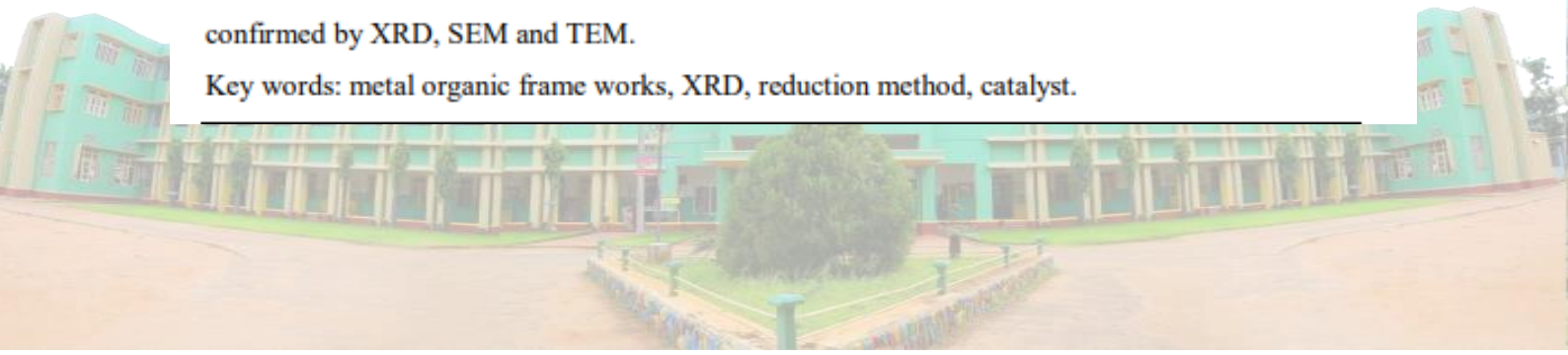
Recently, the embedding of metallic nanoparticles inside the pores of Metal-Organic Frameworks have huddled great attentiveness in the field of catalysis. Metal-Organic Frameworks are a class of porous crystalline compounds consisting of metal ions or clusters coordinated to organic ligands or linkers. Most of the time, terephthalates and benzene tricarboxylates are used as ligands. Modified MOFs can be made by completely or partially replacing the parent aromatic carboxylates with derivatives that have acidic or basic groups. The metal ions form nodes that bind the arms of the linkers together to form a repeating, cage-like structure. Due to this hollow structure, MOFs have an extraordinarily large internal surface area. Metal-Organic Frameworks offer unique features like uniform pore structures; atomic-level structural uniformity; tunable porosity; extensive varieties; and flexibility in network topology, geometry, dimension, and chemical functionality which made them more desirable for heterogeneous catalysis compared to other porous materials. Well dispersed CuNi nanoparticles

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are successfully immobilized inside porous metal-organic framework MIL-101 by a facile sequential impregnation-reduction approach. By virtue of the bimetallic synergistic effect between Cu and Ni and the strong metal-support interaction between CuNi nanoparticles and MIL-101 support, the resulting CuNi/MIL-101 catalyst exhibited excellent catalytic activity for the generation of hydrogen from formic acid. The resulted catalyst was characterized and confirmed by XRD, SEM and TEM.

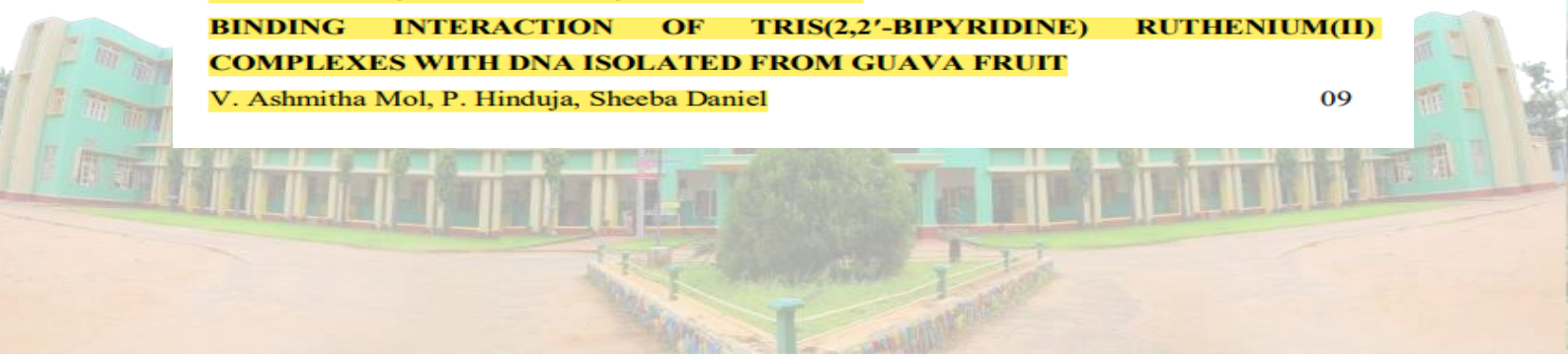
Key words: metal organic frame works, XRD, reduction method, catalyst.





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**PHYTOCHEMICAL SCREENING AND ANTIMICROBIAL ACTIVITY OF
ANDROGRAPHIS PANICULATA LEAF**

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ABSTRACT

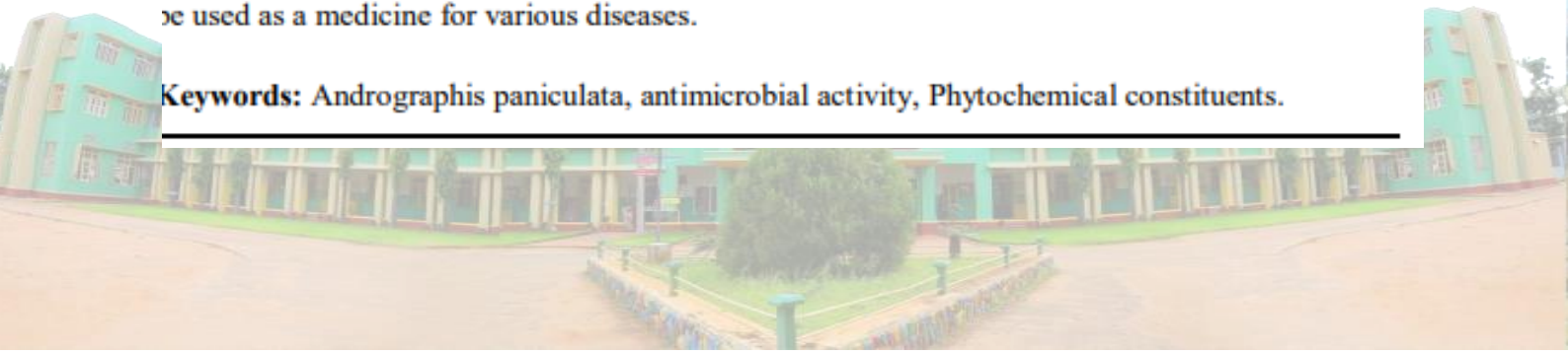
Traditional medicines play a vital role in the history of curing diseases and it is believed that those medicines are reliable based on their practical experiences. The people primarily take traditional medicine as the first step to get rid of the ailments. Especially, the plant materials act as a source of phytochemical constituents which helps to maintain the health status. Medicinal plant is an integral part of human life to combat the sufferings from the dawn of civilization named as the 'King of Bitters'. In this current scenario, Nilavembu, is one such Siddha herb that has innumerable immune-enhancing properties like anti-pyretic, cholagogue, digestive, hepatoprotective and anti-inflammatory activity. The botanical name of Nilavembu is *Andrographis paniculata*, belongs to the family Acanthaceae. The present work deals with the study of phytochemical constituents of ethanolic extract of *Andrographis paniculata* leaf and also

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evaluated its antimicrobial activity. The results of phytochemical screening showed the presence of sugars, rich in minerals, flavonoids, tannins, alkaloids, saponins, proteins and phytosterols. Antimicrobial activity was assessed by disc diffusion method and measured in terms of zone of inhibition. The antimicrobial data demonstrated that *Andrographis paniculata* having more antimicrobial activity than compared with the standard. Hence, the leaves of *Andrographis* can be used as a medicine for various diseases.

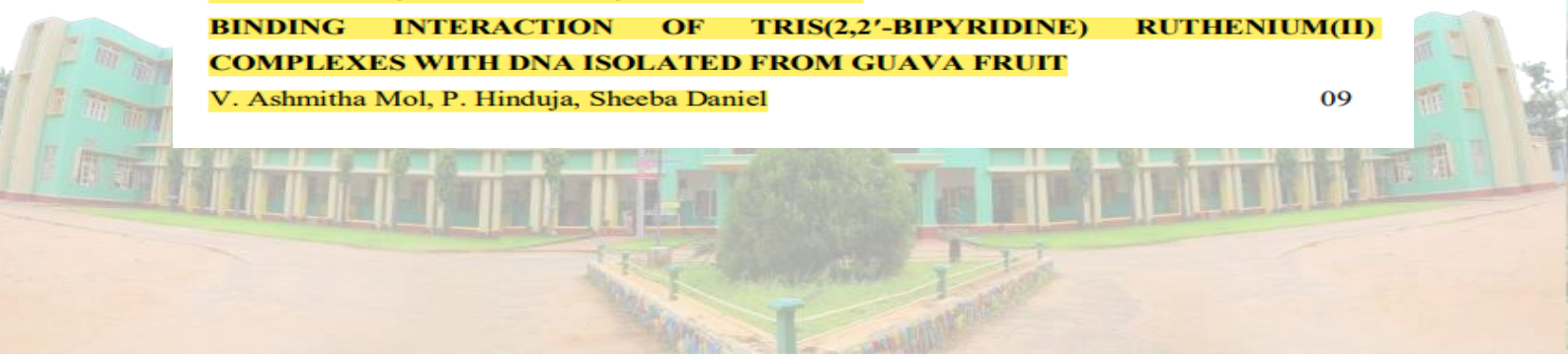
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Keywords: *Andrographis paniculata*, antimicrobial activity, Phytochemical constituents.

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COMPLEXES WITH DNA ISOLATED FROM GUAVA FRUIT**

V. Ashmitha Mol, P. Hinduja, **Sheeba Daniel***

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ABSTRACT

Isolation of DNA from guava and its binding interaction with three Ru(II)-bipyridine complexes $[\text{Ru}(\text{bpy})_3]^{2+}$, $[\text{Ru}(\text{dmbpy})_3]^{2+}$ and $[\text{Ru}(\text{dtbpy})_3]^{2+}$ (bpy = 2,2'-bipyridine, dmbpy = 4,4'-dimethyl-2,2'-bipyridine and dtbpy = 4,4'-di-*ter*-butyl-2,2'-bipyridine) has been investigated by UV-Visible absorption spectral studies. The complexes $[\text{Ru}(\text{bpy})_3]^{2+}$, $[\text{Ru}(\text{dmbpy})_3]^{2+}$ and $[\text{Ru}(\text{dtbpy})_3]^{2+}$ show metal to ligand charge transfer absorption peaks in the region 455-465 nm. The absorption spectrum of DNA isolated from guava shows a shoulder peak at 255 nm. The addition of $[\text{Ru}(\text{bpy})_3]^{2+}$, $[\text{Ru}(\text{dmbpy})_3]^{2+}$ and $[\text{Ru}(\text{dtbpy})_3]^{2+}$ complexes with the DNA isolated from guava exhibits hyperchromic and bathochromic shifts. This indicates that the complexes interact with the DNA through intercalative and electrostatic modes of binding. The binding constant (K_b) of these complexes with the DNA is determined from the Benesi-Hildebrand plot. The K_b value of $[\text{Ru}(\text{dtbpy})_3]^{2+}$ complex is higher than that of $[\text{Ru}(\text{bpy})_3]^{2+}$ and $[\text{Ru}(\text{dmbpy})_3]^{2+}$ complexes. This is due to the hydrophobic nature of $[\text{Ru}(\text{dtbpy})_3]^{2+}$ complex. The obtained results reveal that the complexes bind strongly with the DNA in the MLCT region and the K_b values depend on the nature of the ligands present in the complexes.

Keywords: Guava DNA, Ru(II)-bipyridine complexes, Binding Constant, Intercalative interaction, Electrostatic interaction



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EVALUATION OF PHYTOCHEMICAL COMPONENTS AND ANTIMICROBIAL

ACTIVITY IN LEAF OF *ACHYRANTES ASPERA*

Goldin Sneha.S¹, Anees Asariga.P², Lizy Roselet³

^{1,2,3}Holy Cross College (Autonomous) Nagercoil, Tamil Nadu, India

Plants have been the principal tools of traditional medicine since time immemorial, however only a small portion of botanical wealth is used in traditional medicines. The medicinal properties of plants totally based on the phytochemicals, which are produced and stored in precise parts or in all parts of plant and can be derived from any part of the plant like- stem, leaves, root, bark, flowers, fruits and seeds etc and responsible for antioxidant, antimicrobial, antipyretic activity. The extract of the leaf of *Achyranthes aspera* was prepared and the phytochemical components were analysed. The extract was characterized using Fourier Transform Infrared spectroscopy and UV-Vis spectroscopic techniques. The antifungal and antibacterial activity of the leaf extract was evaluated against two strains of bacteria and fungi. The leaf extract was highly effective against the selected strains of bacteria and fungi. Thus the leaf extract of *Achyranthes aspera* can be selected as a suitable candidate for pharmacological formulation.

Keywords: *Achyranthes aspera*, phytochemicals, antibacterial activity, antifungal activity, pharmacological formulation





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F.D. Jerslin Fincy, Divya Peter, M. Shirly Treasa

Holy cross College (Autonomous), Nagercoil Tamil Nadu, India

ABSTRACT

Senna auriculata [avarampoo in tamil] which is a backbone of all traditional plants are used to treat diabetes, microbial diseases, urinary discharge and other irritations. The leaves were extracted with both ethanol and aqueous solution by incubation shaking method. The phytochemical screening and antimicrobial activities were studied. Since results were good, the sample was initiated to fourier transform infrared spectroscopy. Presence of phytochemicals such

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as alkaloids, flavanoids, phenol and saponins were identified. *Senna auriculata* was observed to have good antibacterial as well as antifungal activity and can be used for medicinal purposes.

Key words: *Senna auriculata*, phytochemicals, ethanol extract , aqueous solution microbial activity





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the generation of hydrogen from formic acid. The resulted catalyst was characterized and confirmed by XRD, SEM and TEM.

Key words: metal organic frame works, XRD, reduction method, catalyst.

**FABRICATION OF CHITIN BASED BIOPLASTICS FROM SQUID BONES AND
BLADDERWRACK SEaweEDS**

L.Monica¹, G. Nanthana² and Sheeba Daniel^{3*}

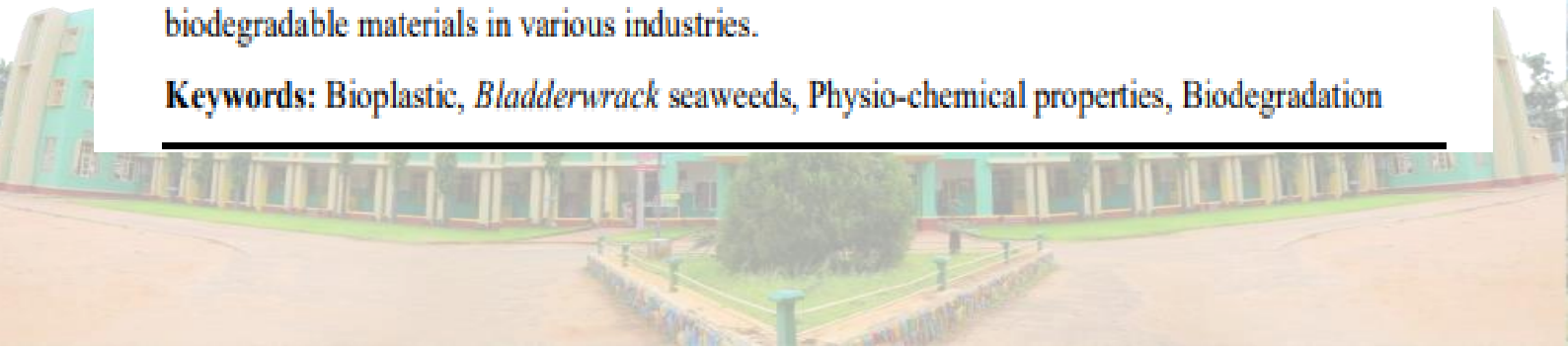
^{1,2,3}*Department of Chemistry, Holy Cross College (Autonomous), Nagercoil, Tamil Nadu, India.*

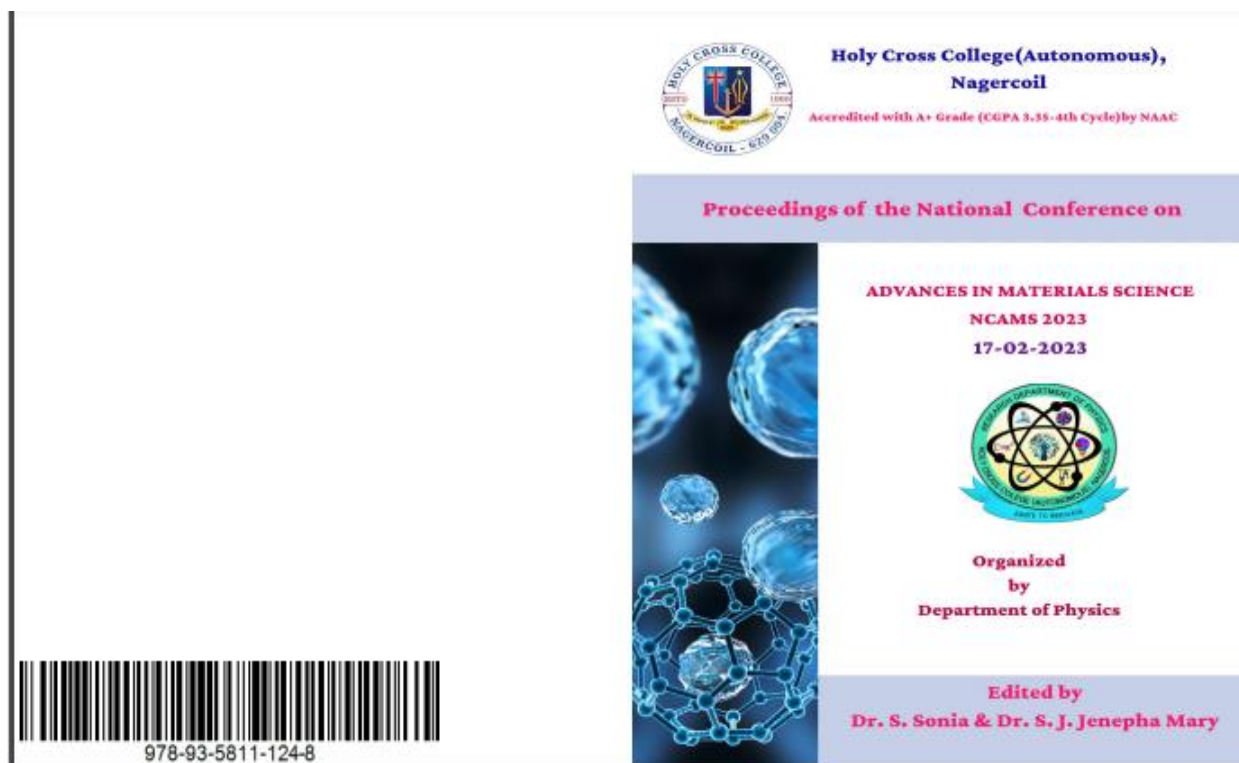
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ABSTRACT

Bioplastics are considered as a promising alternative to plastics since they may diminish the dependency on fossil fuels and certain environmental problems. The property of biodegradability makes them unique and separates from the rest of the plastics. The aim of the present investigation is to synthesize eco-friendly and cost-effective bioplastic films from squid bones and *Bladderwrack* seaweeds. The physio-chemical properties such as thickness, swelling percentage, water absorption percentage, film transparency, water solubility and chemical resistance of the synthesized bioplastic films are determined. The biodegradable properties of the synthesised bioplastic films are determined by soil burial treatment. The synthesized bioplastic shows different physical, chemical and biological properties. The obtained results reveal that these bioplastics may serve as a substitute for the conventional plastics. Therefore, the bioplastics synthesized from bladderwrack and chitin may have the potential to be used as biodegradable materials in various industries.

Keywords: Bioplastic, *Bladderwrack* seaweeds, Physio-chemical properties, Biodegradation





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A REVIEW ON HYDROGENATION OF NITRO COMPOUNDS OVER BIMETALLIC NANOPARTICLES IN A METAL-ORGANIC FRAMEWORKS

Hatin Betseba A H ¹, *Christabel Shaji . Y ² and Ajith Sinthuja .S ³

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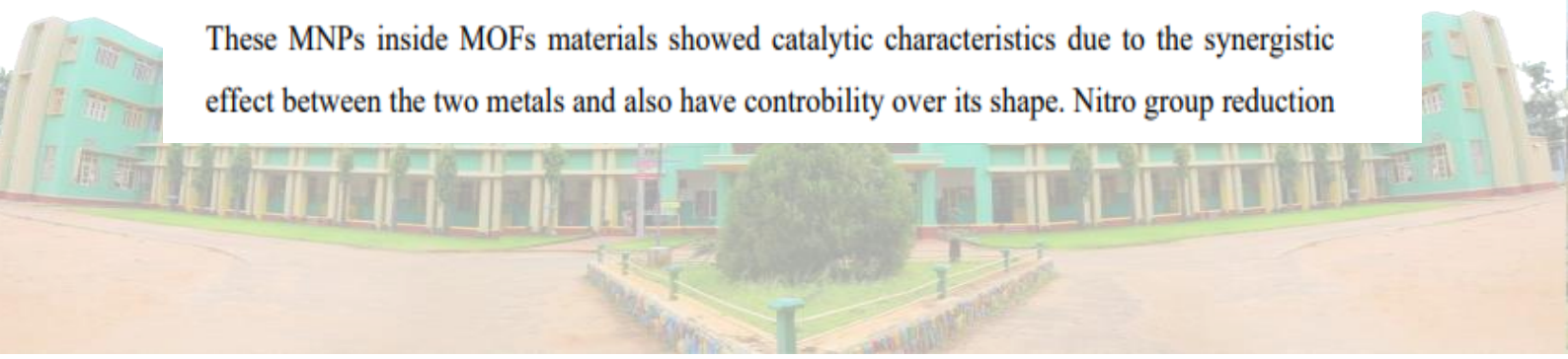
ABSTRACT

Metal organic frameworks (MOFs) are a family of crystalline materials composed of single or multiple linkers, inorganic metal ions, or clusters, and connected by coordination interactions. The metal ions form nodes that bind the arms of the linkers together to form a repeating, cage-like structure. Due to this hollow structure, MOFs have an extraordinarily large internal surface area. They have distinctive properties like uniform pore structures, tunable porosity and flexibility in network topology, geometry, and chemical functionality. These characteristics

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make them more desirable for heterogeneous catalysis. MOFs were utilised as assist and stabilised the metallic nanoparticles (MNPs) that have been embedded into the internal cavities. These MNPs inside MOFs materials showed catalytic characteristics due to the synergistic effect between the two metals and also have controbility over its shape. Nitro group reduction





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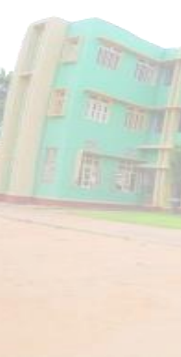
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**Facile and Rapid Synthesis of Silver Nanoparticles Using *Piper Nigrum* Extract by Green Method
and Its Evaluation for Biological Activity**

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Abstract

Medicinal plants are of great importance to researchers in the field of pharmacology as most pharmaceutical industries depend on medicinal plants for their raw materials. An important aspect of nanotechnology is the development of reliable methods for the synthesis of nanomaterials in view of the size, composition and shape that can be controlled. In recent years, with increasing environmental problems, attempts for the synthesis of nanomaterials through environmentally clean methods have been increased. Green synthesis of silver nanoparticles makes use of plant constituents, like carbohydrates, fats, enzymes, flavonoids, terpenoids, polyphenols, and alkaloids, as reducing agents to synthesize silver nanoparticles. Green synthesis of nanoparticles is widely accepted due to the less toxicity in comparison with chemical methods. Here we report a novel cost-effective and eco-friendly method for the rapid green synthesis of silver nanoparticles using the extract of *Piper nigrum*. The fabricated nanoparticles possessed excellent antibacterial property against both Gram-positive and Gram-negative bacteria.

Keywords: Silver nanoparticles, nanomaterials, biological Synthesis, *Piper nigrum*

1. Introduction

Nanotechnology is the process of synthesizing particles which are in the nano range, ranging from approximately 1 to 100 nm. They have large surface area to volume ratio due to which they possess optical properties as they are small enough to confine their electrons and produce quantum effects by which their detection becomes easy. Intensive research is being done on silver nanoparticles (AgNPs) owing to their wide range of applications in all the fields [6]. Among all nanomaterials, silver nanoparticles (AgNPs) are unique as they are used in vast arrays of applications including medicine, food and consumer products [4]. Synthesis of such variety of AgNPs is possible by thermal decomposition, laser ablation, ultrasound and aqueous chemical reduction method [7]. In order to minimize the risk of environmental hazards and to ensure economic sustainability by reducing production costs, there is a growing need to develop eco-friendly protocols for the nanoparticles synthesis employing green chemistry approaches using cheaply available, renewable natural resources. One of them is synthesis of nanoparticles by biological process which implemented to develop safe, cost effective and environmentally friendly technologies. Very recently green silver nanoparticles have been synthesized using various natural products like green tea (*Camellia sinensis*), neem (*Azadirachta indica*) leaf broth, natural rubber, starch, aloe vera plant extract, lemongrass leaves extract, leguminous shrub (*Sesbania drummondii*) etc. Nowadays, plant parts like fruit, leaf, bark, seed, and stem extracts have been effectively used for synthesis of nanoparticles. In the group of medicinal plants, the *Piper nigrum* possess excellent medicinal properties due to the presence of enormous phytochemicals and biomolecules like alkaloids, proteins, polysaccharides, amino acids and vitamins. The piperine is an alkaloid, majorly found in *Piper nigrum*. [8]. Owing to the presence of large amount of phytochemicals, *Piper nigrum* was



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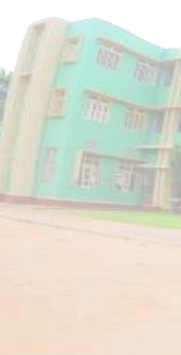
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**Synthesis, Characterization of Metal-Organic Framework MIL-101(Cr) For the Photocatalytic
Degradation of Rbb Dye**

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Abstract

The porous crystalline metal-organic framework (MOF) MIL-101(Cr) was synthesized by hydrothermal method in Teflon stainless sealed autoclave at 175°C for about 8hrs. The synthesized porous MOF was tested for the photocatalytic activity of RBB dye at different time intervals and the decolourization of RBB dye under UV light was observed. Whereas in the absence of the MOF MIL-101(Cr), no decolourization of RBB dye was observed, this proved that the RBB dye was more stable even under photolysis. The crystalline nature of MOF MIL-101(Cr) was proved by XRD analysis and the elemental analysis was confirmed by XPS. The UV-Vis spectra of degradation of RBB dye by MOF proved that as the time intervals increases the absorbance tends to decreases.

Key words: Metal-organic framework, RBB dye, photocatalytic activity.

1 Introduction:

The organic-inorganic hybrid materials known as metal-organic frameworks (MOFs) have crystalline pores and are composed of a predictable arrangement of positively charged metal ions ringed by organic linker molecules. The metal ions aggregate to form nodes that join the arms of the linkers, forming a repetitive, cage-like structure [1]. The internal surface area of MOFs is incredibly vast because of their hollow structure with remarkable structural diversity attributed to their uniform pore structures, variable porosity, wide variety, and versatility in chemical functionality, network structure, and geometry [2]. The cage-like structure of MOFs is being exploited for numerous applications in diverse disciplines, including gas storage and separation, drug delivery, catalysis, and sensing. Due to its distinct characteristics, such as adsorption/desorption kinetics and accessibility to the internal active sites for increased catalytic activity, nanoMOFs have demonstrated significant advantages over bulk materials [3,4]. The textile, paint, and dyestuff industries generate a sizable amount of wastewater containing dyes. The result has been serious environmental problems all across the planet. It can be difficult to manage dyes alongside trash from nearby industries due to their complicated chemical properties [5,6]. MIL-101(Cr) is made up of trimer units (Cr₇O₁₆), which are composed of clusters of CrO₆ atoms, each of which has six oxygen atoms surrounding a central chromium atom. Due to its capacity to totally breakdown the pollutants, heterogeneous photocatalysis is one of the extremely successful treatments utilized for a variety of organic pollutants. UV radiation and photocatalytic semiconductors are typically used for photocatalytic destruction of dissolved chemicals in water under mild temperature and pressure conditions [7].





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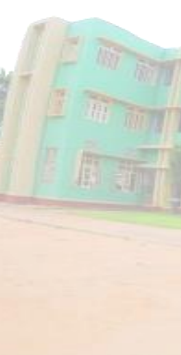
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Zinc Oxide - Polyaniline Nanocomposites Synthesis, Characterization and Electrical Studies

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Abstract

Zinc oxide polyaniline nanocomposites have a variety of potential applications due to their unique structure, which combines the properties of both materials. This study involves the successful fabrication by co-precipitation method of green mediated Zinc oxide (ZnO) polyaniline nanocomposites using star apple leaves as doping agent and rice bran oil as organic medium for in situ polymerization of PANI. The synthesized composites were characterized by UV-Vis absorption spectra, Fourier transformation infrared (FT-IR), X-ray diffraction (XRD) and thermogravimetric analysis (TGA). The electrical permeability of pure PANI and PANI/ZnO nanocomposites is found to be $2.7 \times 10^{-2} \text{ Scm}^{-1}$. The ZnO polyaniline nanocomposites are therefore a viable material for a variety of applications.

Key words: Zinc Oxide, Polyaniline, Nanocomposites, Electrical Conductivity, Green synthesis

1. Introduction

Many of the major technological advancements of this century are expected to have their origins in nanotechnology. Synthesis of nanoparticles with various chemical compositions, size, and regulated monodispersity is a crucial topic of research in nanoscience and nanotechnology [1]. Zinc oxide (ZnO) polyaniline nanocomposites materials are a class of advanced nanomaterials composed of ZnO and polyaniline nanostructures embedded in each other. It has combined the properties of both materials into one which results in increased mechanical, electrical and optical properties. This material is widely used in applications involving optics, biomedicine, catalysis, sensors etc. [2]. ZnO polyaniline nanocomposites has numerous advantages such as increased conductivity, improved shock resistant properties and also reduced surface oxidation. These properties enable it to be used as a coating for corrosion protection, in electrical-mechanical and electronics applications and also in photovoltaic devices [3]. It also provides superior gas sensing, antibacterial, antifungal and ultraviolet radiation protection.

Currently, a large number of physical, chemical, biological, and hybrid methods are available to synthesize different types of nanoparticles [4]. The nanoparticles formed using chemical method show specific properties. However, biosynthesis of metal nanoparticles has attracted a lot of attention and includes a wide range of processes that reduce or eliminate toxic substances to restore the environment. The synthesis of metal nanoparticles using inactivated plant tissue, plant extracts, exudates, and other parts of living plants is a modern alternative for their production [5-8]. Green synthesis of nanoparticles makes use of environmentally friendly, non-toxic and safe reagents [9]. Thus it is an important material for future developments in nanotechnology [10].

2. Materials and Methods

Preparation of Leaf Extracts: Apple fruit tree leaves were collected and cleaned with deionized water. The leaves were dried in the shade for a week then powdered finely by using a mortar. About 5g of



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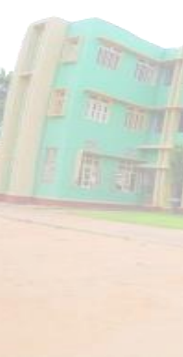
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Abstract

Binding of $[\text{Ru}(\text{phen})_2]^{2+}$, $[\text{Ru}(\text{bphen})_2]^{2+}$ and $[\text{Ru}(\text{bps})_2]^+$ (phen = 1,10-phenanthroline, bphen = bathophenanthroline and bps = bathophenanthrolinedisulfonate) complexes with the DNA isolated from banana fruit extract at various concentrations (5×10^{-5} - 3×10^{-4} M) in aqueous medium has been investigated by UV absorption spectral techniques. The binding constant (K_b) of these complexes with the DNA isolated from the banana fruit is determined from Benesi-Hildebrand plots and it occurs in the range 1.3×10^6 - $8.4 \times 10^7 \text{ M}^{-1}$. The K_b value of $[\text{Ru}(\text{bps})_2]^+$ complex is higher than that of $[\text{Ru}(\text{phen})_2]^{2+}$ and $[\text{Ru}(\text{bphen})_2]^{2+}$ complexes. This is due to the greater π - π interaction of the ligands of the $[\text{Ru}(\text{bps})_2]^+$ complex with the base pair of the DNA. Binding studies of all three complexes on the DNA display hyperchromic and bathochromic shifts. This confirms that the complexes interact with the DNA through intercalative and electrostatic binding modes. The obtained results revealed that the DNA binds strongly with the ruthenium phenanthroline complexes. The K_b values depend on the nature of the ligands present in the complexes. This study confirms the binding nature of $[\text{Ru}(\text{phen})_2]^{2+}$, $[\text{Ru}(\text{bphen})_2]^{2+}$ and $[\text{Ru}(\text{bps})_2]^+$ complexes with the DNA isolated from banana extract.

Key Words: Ruthenium-phenanthroline complexes, banana extract, binding constant, intercalative interaction, electrostatic interaction

1. Introduction

Cancer is developed by rapid, uncontrolled, and abnormal cell proliferation and one of the leading causes of death worldwide in human beings. For the remedial measures of preventing different types of cancers, one of the research domains that have gained substantial importance in medical science is the development of new metallo-drugs and their investigations as potential anticancer drug agents by using various analytical techniques (Arshad and Farooqi, 2018). Ruthenium(II) complexes due to the strong DNA-binding and potential anticancer activity currently focus on DNA binding extensively as the material of inheritance and control for the structure and functions of the cells (Krishnaveni and Kumaraguru, 2017, Bugarcic *et al.*, 2009). Ru(II)-polypyridyl complexes undergo binding with DNA, RNA and proteins and act as therapeutic agents (Zayate *et al.*, 2013).

Ruthenium co-ordinated with polypyridyl ligands such as 1,10-phenanthroline (phen), acts as a chelating agent for metal complexes that exhibit metal-to-ligand charge transfer (MLCT) and ligand-to-metal charge transfer (LMCT) transitions in the complex (Abdel-Shafiet *et al.*, 2004). To understand the role of the Ru(II) complex with DNA, the present study focuses on the binding of $[\text{Ru}(\text{phen})_2]^{2+}$, $[\text{Ru}(\text{bphen})_2]^{2+}$ and $[\text{Ru}(\text{bps})_2]^+$ (phen = 1,10-phenanthroline, bphen = bathophenanthroline and bps = bathophenanthrolinedisulfonate) complexes with the DNA isolated from banana fruit extract. The binding of the complexes with the DNA isolated from banana fruit extract leads to a better binding property which plays a way in applicability in various medicinal and biological fields.



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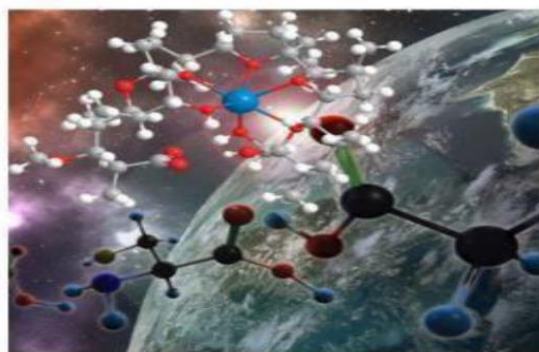


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on

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ORGANIC CHEMISTRY" (ICISASOC - 2023)**

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EDITORIAL

The innovations in chemistry have always been the strong pillar of support for humanity in its pursuit for development in all walks of life. The development of material science, innumerable gadgets, devices and materials in various fields such as medicine, biosynthesis, nanotechnology are meant to improve the quality of day to day life. The past few decades have seen unprecedented advancements in the field of chemistry with the development of specialty materials like polymers and composites with tailor made properties with ample potential to uplift the field of material sciences to new heights. We believe that excellence and innovation in synthetic chemistry will continue to be the success in all phases of drug discovery and will not be commoditized at least in the foreseeable future. The principal goal of this seminar is to provide a platform for students, researchers, academicians and industrialists to come together to understand and discuss the latest developments and salient features, of the research pursuits in all fields of chemistry. Experts from the frontier areas like nanoscience, organic electronics, functional materials and fluorophores will exchange their ideas and experiences during this seminar.

The editors have taken the initiative and the responsibility of the enormous task of bringing together the technical articles contributed by the presenters, in this volume of research articles.

We do hope that the deliberations in the conference would trigger a spirit of true pursuit of knowledge and the research aptitude of the students.

We take this opportunity to sincerely thank all the paper presenters and colleagues without whose support our dream of bringing out this summation of research papers would ever turn to be a reality.

Dr. M. Anitha Malbi
Dr. Y. Christabel Shaji
Dr. M. Shirly Treasa



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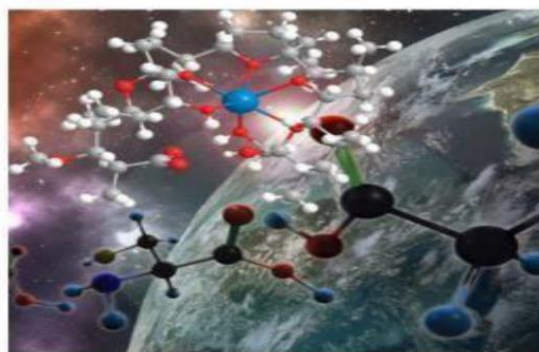


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SYNTHESIS, CHARACTERIZATION AND EVALUATION OF BIOLOGICAL PROPERTIES OF Ni(II) AND Cu(II) METAL CHELATES WITH SCHIFF BASE LIGANDS DERIVED FROM GLUTARALDEHYDE WITH L-LEUCINE

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Abstract

A nitrogen-oxygen Schiff base HL derived from Glutaraldehyde and L-Leucine has been reacted with different divalent metal ions in 2:1 molar ratio, producing neutral complexes. All compounds were characterized using physico-chemical and spectroscopic methods namely elemental analysis, melting point, magnetic moment measurement, conductivity measurement, UV-Vis, IR, ¹HNMR spectroscopy and XRD measurements. They were further analysed by thermal technique (TGA/DTA) to gain better insight about the thermal stability and kinetic properties of the complexes. The IR data demonstrated the tetradentate binding of Schiff base ligand. The molar conductivity values were relatively low, showing their non-electrolytic nature. Room temperature magnetic susceptibility measurements revealed that the nature of Ni (II) and Cu(II) complexes were paramagnetic. The in vitro antimicrobial activities of all the compounds were screened against different microbial species by Disc Diffusion method and showed better activity compared to parent drug and control drug.

Keyword : Schiff base, Metal complexes, IR, XRD, tetradentate, Antimicrobial activity

1. Introduction

Novel transition metal complexes derived from Schiff bases have occupied a central role in the development of coordination chemistry. Schiff base can accommodate different metal centers involving various coordination modes thereby allowing successful synthesis of homo and hetero metallic complexes with varied stereochemistry. This feature is employed for modeling active sites in biological systems. A large number of Schiff bases and their complexes have been investigated for their interesting and important properties, such as their ability to reversibly bind oxygen, their catalytic activity in the hydrogenation of olefins, their photochromic properties and their complexing ability towards some toxic metals. Many biologically important Schiff bases have been reported in the literature possessing, antimicrobial, antibacterial, antifungal, anti-inflammatory, anti convulsant, antitumor and anti- HIV activities[1-4]. In vivo studies have indicated that some biologically active compounds may become more carcinostatic and bacteriostatic upon chelation[5]. Several reviews showed that the metallo-organic chemistry of such compounds greatly influence their biological action highlighting the catalytic function metal in many biological processes[6-8].

Therefore, considering the above facts and continuing our interest in this field, the present work reports a study on the synthesis, characterization and antimicrobial properties of Ni and Cu complexes with the Schiff base derived from Glutaraldehyde and L-Leucine (HL).

2. Experimental

2.1 Materials and Physical Measurements

All the glassware used for the preparation were cleaned with chromic mixture, distilled water and then dried in Oven at 110°C. All the chemicals such as Glutaraldehyde, L- Leucine, Cupric nitrate and Nickel nitrate were of analytical grade and used as such without any further purification. Glutaraldehyde and L-Leucine were obtained from Sigma Aldrich, Cupric nitrate and Nickel nitrate was obtained from Merck (LTD). Solvents were purified and dried by standard methods. The solvent system used was DMSO [dimethyl Sulfoxide]. The metal contents of the complexes were determined by EDTA titration. Elemental analyses were carried out on a Vario EL 111 elemental analyzer at Sophisticated Analytical Instruments facility, CUSAT, Kochi. Thin layer Chromatography was performed on precoated Silica gel (E-Merck) 607-254 analytical plates (0.25mm). IR Spectra were recorded in KBr discs on a Perkin – Elmer FT-IR spectrometer model 1600 in the 4000-400 cm⁻¹



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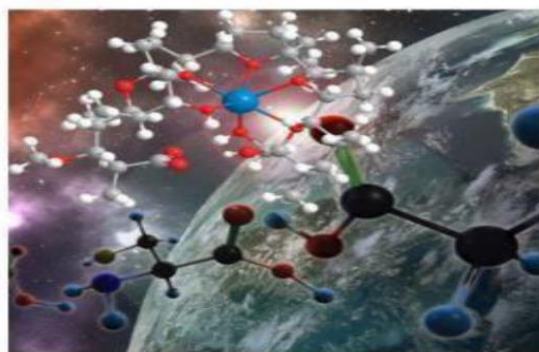


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SYNTHESIS AND CHARACTERISATION OF HYDROXY PROPYL α -CYCLODEXTRIN INCLUSION COMPLEX WITH STIGMASTEROL

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Abstract

This study investigates the interaction between stigmaterol and Hydroxy propyl α -cyclodextrin (HP α -CD) in aqueous solution as well as in solid state and characterized by spectral techniques. The liquid complex is characterized by ultraviolet (UV)-visible spectroscopy and solid inclusion complex is characterized by ¹H nuclear magnetic resonance spectroscopy. The thermal behavior of the complex is analyzed by differential scanning calorimeter. Formation constant from UV-visible analysis is found to be 560 M⁻¹ by Benesi–Hildebrand equation. The results confirm the inclusion. The newly synthesized inclusion complex is a potent pharmaceutical agent in drug formulation as the solubility of stigmaterol is enhanced when included in the cavity of HP α -CD.

Key words: Hydroxy propyl α -Cyclodextrin, Stigmaterol, Inclusion complex, Formation constant

1. Introduction

Stigmaterol is an unsaturated 6-6-6-5 tetracyclic phytosterol with a polar hydroxyl group at one end and a large non polar lipophilic planar and rigid 6-6-6-5 skeleton at the other end. It has a flexible C₁₀ branched-chain which makes it an interesting amphiphile. Stigmaterol is shown to reduce blood cholesterol and thus reduce the risk of coronary heart diseases [1,2]. It is a potent pharmaceutical agent in treating certain cancers including cervical, ovarian, prostate, breast and colon [3]. The effectiveness of any drug relies on its bioavailability and thus ultimately upon its solubility. Solubility is one of the key parameters to achieve the desired concentration of drugs in the systematic circulation to effect the pharmacological response.

To augment the aqueous solubility of lipophilic moieties such as stigmaterol, a well recognised strategy in practice for more than a century is the formation of cyclodextrin inclusion complexes are synthesised. Cyclodextrins are cyclic organic compounds obtained by enzymatic transformation of starch [4]. Among the class of host molecules, the Alpha CD is one of the most abundant natural oligomers and corresponds to the association of 6 glucose units whose cavity exhibits hydrophobic character whereas the exterior is strongly hydrophilic [5-7]. This peculiar structure allows various substrates to be included in the cavity via non covalent bonds to form inclusion complexes. The inclusion ability of cyclodextrins has attracted considerable attention for the merits of enhancing stability, improving solubility and bioavailability of insoluble pharmaceutical agent[8].

2. Materials and Methods

Stigmaterol was purchased from Himedia, (India). Analytical grade of HP α -CD was purchased from Sigma Aldrich. Ethanol was purchased from Himedia. The chemicals were used as purchased. The solvents used were of analytical grade.

2.1. Preparation of solid inclusion complex of stigmaterol and HP α -CD

About 0.1238g of stigmaterol was accurately weighed and dissolved in 30mL ethanol. About 0.354g of HP α -CD was dissolved in 30mL distilled water in a 250mL beaker. Both the solutions were mixed together in a beaker and put over electromagnetic stirrer to stir continuously for 48hrs at room temperature. The precipitate obtained after evaporation was dried and used for characterisation.

2.2. Preparation of liquid inclusion complex of stigmaterol and HP α -CD

About 0.1650g of stigmaterol was dissolved in 10mL of ethanol and about 0.354g of HP α -CD was dissolved in 30mL double distilled water in a 100mL beaker. Liquid inclusion complexes were synthesised by varying the concentration of HP α -CD and HP α -CD from 2 \times 10⁻³M to 1 \times 10⁻²M. The reactions were carried out at room temperature.



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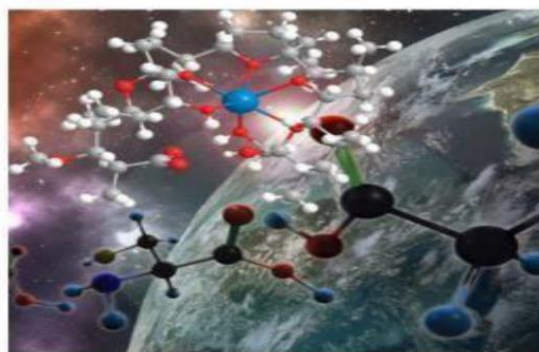


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FABRICATION OF CHITIN BASED BIOPLASTICS FROM SQUID BONES AND BLADDERWRACK SEaweEDS

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Abstract

Bioplastics are considered as a promising alternative to plastics since they may diminish the dependency on fossil fuels and certain environmental problems. The property of biodegradability makes them unique and separates from the rest of the plastics. The aim of the present investigation is to synthesize eco-friendly and cost-effective bioplastic films from squid bones and *Bladderwrack* seaweeds. The physical properties such as thickness, swelling percentage, water absorption percentage, water solubility and chemical resistance of the synthesized bioplastic films are determined. The synthesised bioplastic shows different physical properties. The obtained results reveal that these bioplastics may serve as a substitute for the conventional plastics. Therefore, the bioplastics synthesised from bladderwrack and chitin may have the potential to be used as biodegradable materials in various industries.

Keywords: Bioplastic, *Bladderwrack* seaweeds, Physio-chemical properties, Biodegradation

1. Introduction

Bioplastic is a type of plastic that can be made from natural resources such as vegetable oils and starch. Today, bioplastics have become a necessity in many industrial applications such as food packaging, agriculture and horticulture, composting bags, and hygiene [1,2]. Bioplastics have also found their use in biomedical, structural, electrical, and other consumer products [3,4]. With increasing demand for global plastic consumption, a lot of research is being dedicated towards exploring green materials and new ways to process them. Biodegradable plastics have been used in India for a variety of purposes, including agricultural mulch, surgical implants, industrial packaging, milk sachets, food service, personal care, pharmaceuticals, medical devices, and recreation. Bio-based polymers are in high demand in number of industries and geographical areas. The need for biodegradable packaging materials increases over the coming years. As packaging materials can considerably minimize the amount of trash, biodegradable materials by their nature depend on the action of microbial degradation [5].

Based on the literature survey, the present investigation focusses on the preparation and properties of bioplastics synthesized from chitin (squid bone) and bladderwrack seaweed using glycerol, vinegar and agar-agar as plasticizers. The physical properties of different bioplastics are investigated and compared with bioplastics obtained from different sources.

2. Materials and Methods

2.1 Materials

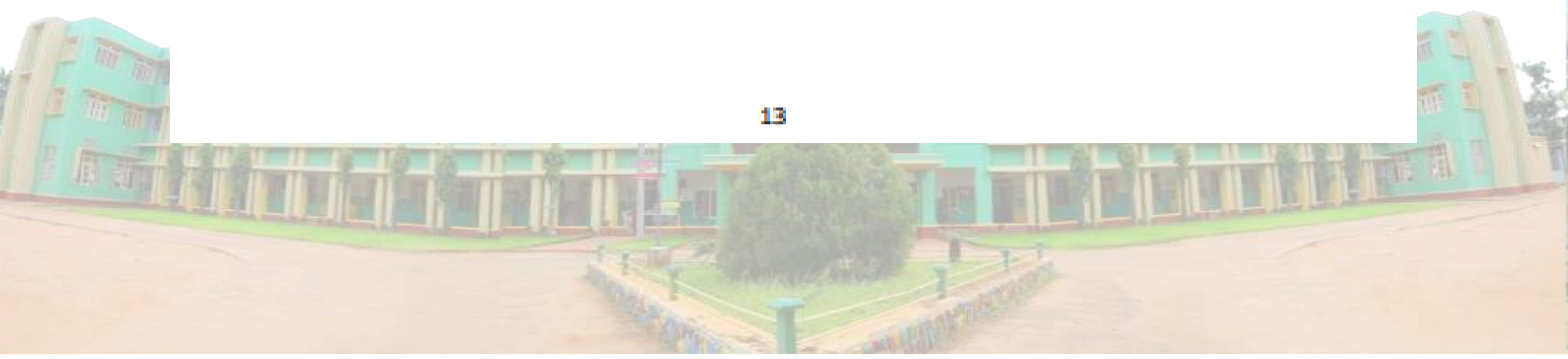
Bladderwrack and chitin were collected from the sea. Agar-agar and vinegar were procured from the local market. Glycerol was purchased from Merck. Double distilled deionized water was used for the preparation and the determination of physical properties of the bioplastics.

2.2 Preparation of chitin and bladderwrack seaweed powder

About 400 g of squid pen and bladderwrack sea weed were taken and dried it in direct sunlight for about 4 days and grinded it in a mixer. The resulting fine powder was collected and used as such for the preparation of bioplastics.

2.3 Synthesis of bioplastic from bladderwrack and chitin

About 1 teaspoon of bladderwrack and 1 teaspoon of chitin were taken in a 250 mL beaker. To this 40 mL of rice starch water, 1g of agar-agar, 15 mL of vinegar and 15 mL of glycerine were added. This mixture was boiled for 15 min with continuous stirring until the formation of a white colloidal gel. The gel was poured as a flat sheet and kept it in direct sunlight for about 48 h. After drying, the bioplastic obtained from bladderwrack and chitin was produced in the form of a thin sheet.





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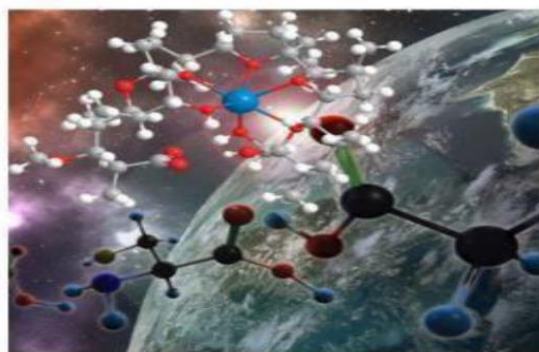


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STUDY ON CARBON PRODUCED FROM BIOPOLYMER CONSIDERING WASTE MANAGEMENT

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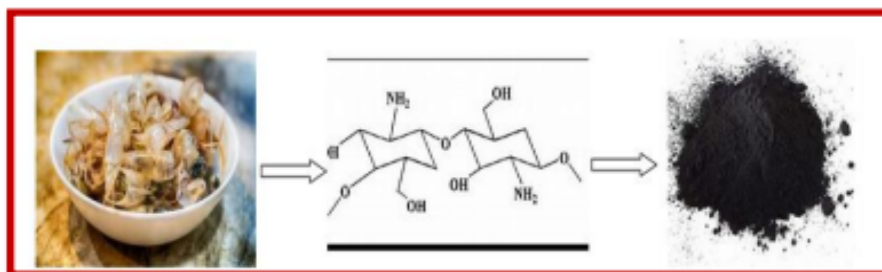
*Corresponding author leslysat@gmail.com

Abstract

Sea food is a source enriched with nutrition, takes a major role in daily diet of human. During the processing of food, huge quantities of waste can be ported from the industry which cause health and environmental hazards. This research work is on waste management of such one; the shrimp shell collected from locality of specific area. Aim of work is to achieve the material with enhanced property in low cost and non-toxic. The shrimp shell is initially treated in chemicals to remove the mineral and protein content. Thus, obtained biopolymer chitosan is pyrolyzed to produce the carbon. At 450°C the chitosan derived carbon yield was maximum, observed from weight loss percentage and this was confirmed from CHNS analysis. The optical property of obtained material was studied from photoluminescence. The dynamic light scattering and zeta potential were also found to know the size of particles and stability of yielded carbon from biomass. The size of obtained material is bulk was observed from dynamic light scattering.

Keywords: Carbon; CHNS; Particle analysis; Zeta Potential; Photoluminescence

Graphical Representation



1. INTRODUCTION

Aquaculture produced food is rich with nutrition and taking major role in economy of small- and large-scale industries in many countries. While the processing of sea food, enormous wastes was generated and the direct discharge may lead to cause contamination of microorganisms. Being the untreated wastes fill the land, the shrimp shell has multipurpose usages, rich with nutrients which can be utilized as feed for animals, resource for agriculture and the source of bioactive compounds (polymer) [1]. Such one form of utility of shrimp waste is the conversion to activated carbon. The activated carbon, carbon-based framework from biochar is attracted by researchers to get a material with efficiency, as adsorbent and in filter membrane etc. Several works in shrimp shell-based chitosan derived carbon are under process to achieve the graphite, graphene, nano 2D, 3D structures. The purity, stability, optical properties, non-toxic, good biocompatibility and crystallinity are the necessary factors which has been concentrated in production of carbon[2]. Here, concentrating the above factors the material is produced in low cost and the basic properties were analyzed.



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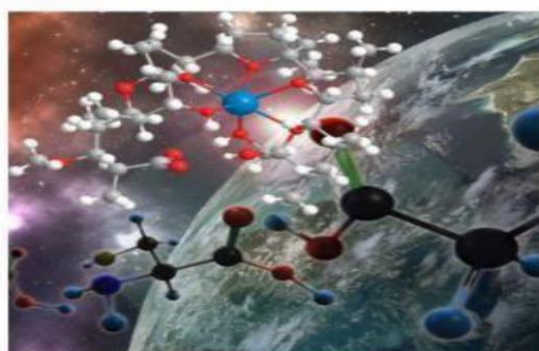


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ISOLATION OF DNA FROM BANANA FRUIT AND ITS BINDING INTERACTION WITH TRIS(2,2'-BIPYRIDINE)RUTHENIUM(II) COMPLEXES

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Abstract

Isolation of DNA from banana and its binding interaction with three Ru(II)-bipyridine complexes $[\text{Ru}(\text{bpy})_3]^{2+}$, $[\text{Ru}(\text{dmbpy})_3]^{2+}$ and $[\text{Ru}(\text{dtbpy})_3]^{2+}$ (bpy = 2,2'-bipyridine, dmbpy = 4,4'-dimethyl-2,2'-bipyridine and dtbpy = 4,4'-di-*tert*-butyl-2,2'-bipyridine) has been investigated by UV-Visible absorption spectral studies. The complexes $[\text{Ru}(\text{bpy})_3]^{2+}$, $[\text{Ru}(\text{dmbpy})_3]^{2+}$ and $[\text{Ru}(\text{dtbpy})_3]^{2+}$ show metal to ligand charge transfer absorption peaks in the region 455–465 nm. The absorption spectrum of DNA isolated from banana shows a shoulder peak at 255 nm. The addition of $[\text{Ru}(\text{bpy})_3]^{2+}$, $[\text{Ru}(\text{dmbpy})_3]^{2+}$ and $[\text{Ru}(\text{dtbpy})_3]^{2+}$ complexes with the DNA isolated from banana exhibits hyperchromic and bathochromic shifts. This indicates that the complexes interact with the DNA through intercalative and electrostatic modes of binding. The binding constant (K_b) of these complexes with the DNA is determined from the Benesi-Hildebrand plot. The K_b value of $[\text{Ru}(\text{dtbpy})_3]^{2+}$ complex is higher than that of $[\text{Ru}(\text{bpy})_3]^{2+}$ and $[\text{Ru}(\text{dmbpy})_3]^{2+}$ complexes. This is due to the hydrophobic nature of $[\text{Ru}(\text{dtbpy})_3]^{2+}$ complex. The obtained results reveal that the complexes bind strongly with the DNA in the MLCT region and the K_b values depend on the nature of the ligands present in the complexes.

Keywords: Banana DNA, Ru(II)-bipyridine complexes, Binding Constant, Intercalative interaction, Electrostatic interaction

1. Introduction

Transition metal complexes containing heterocyclic ligands have been of considerable interest in terms of structural chemistry, catalysis and biological functions [1,2]. Metal complexes have been found to bind with DNA through multitude of interactions and to cleave the duplex by virtue of their intrinsic chemical, electrochemical and photochemical reactivities. The biological function of the metal complexes mainly depends on the interaction between the ligand-binding residues and metal ions present in the complexes [3]. The modification of the metal or ligands in the complexes leads to substantial changes in the binding properties.

Among the transition metal complexes, Ru(II)-polypyridine complexes undergo binding with DNA, RNA and proteins and act as therapeutic agents [4]. These complexes possess specific optical and electrochemical properties and also exhibit strong metal to ligand charge transfer (MLCT) transition in the visible region. The MLCT absorption band, emission wavelength, and lifetime can be easily varied by the introduction of various substituents in the polypyridine ligands. In order to understand the role of Ru(II) complexes with DNA, the present study focuses on the binding of $[\text{Ru}(\text{bpy})_3]^{2+}$, $[\text{Ru}(\text{dmbpy})_3]^{2+}$ and $[\text{Ru}(\text{dtbpy})_3]^{2+}$ (bpy = 2,2'-bipyridine, dmbpy = 4,4'-dimethyl-2,2'-bipyridine and dtbpy = 4,4'-di-*tert*-butyl-2,2'-bipyridine) complexes with the DNA isolated from banana extract.

2. Materials and Methods

2.1 Materials

$\text{RuCl}_3 \cdot 3\text{H}_2\text{O}$, bpy, dmbpy and dtbpy were purchased from Sigma-Aldrich. Analytical grade solvents were used for the synthesis of the complex. Double distilled deionized water was used as a solvent for the binding studies.

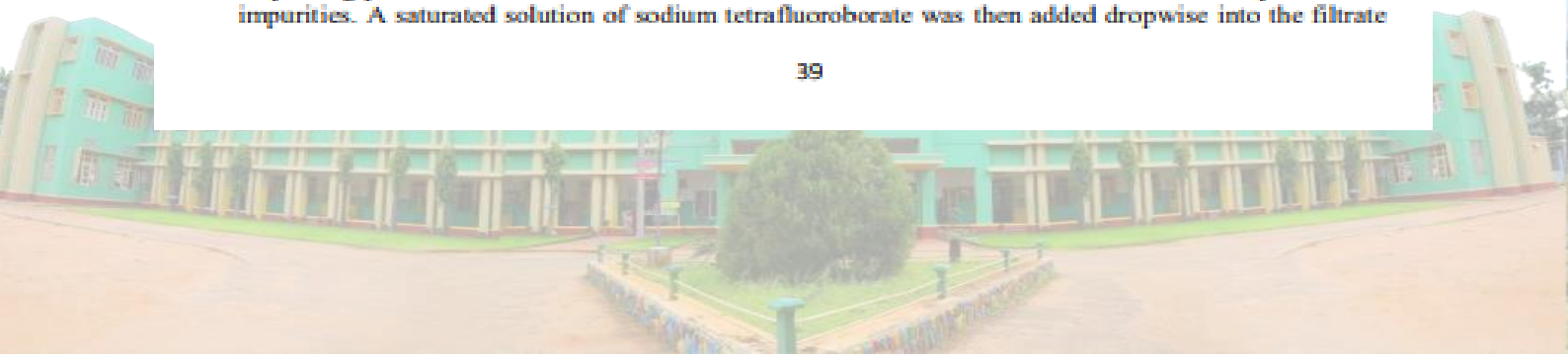
2.2 Synthesis of Ru(II)-bipyridine Complexes

2.2.1 Synthesis of $[\text{Ru}(\text{bpy})_3](\text{BF}_4)_2$ complex

$\text{RuCl}_3 \cdot 3\text{H}_2\text{O}$ (1 mM) and bpy (3 mM) were treated with 25 mL of ethanol and was refluxed for 20 h. The red orange complex formed was remained in the ethanolic solution. The product was filtered, washed with cold water and diethyl ether and dried in a vacuum desiccator.

2.2.2 Synthesis of $[\text{Ru}(\text{dmbpy})_3](\text{BF}_4)_2$ and $[\text{Ru}(\text{dtbpy})_3](\text{BF}_4)_2$ complexes

$\text{RuCl}_3 \cdot 3\text{H}_2\text{O}$ (1 mM) and 4,4'-dimethyl-2,2'-bipyridine (3 mM) were dissolved in 20 mL of ethylene glycol and refluxed for 4 h. The solution was cooled and filtered to remove any insoluble impurities. A saturated solution of sodium tetrafluoroborate was then added dropwise into the filtrate





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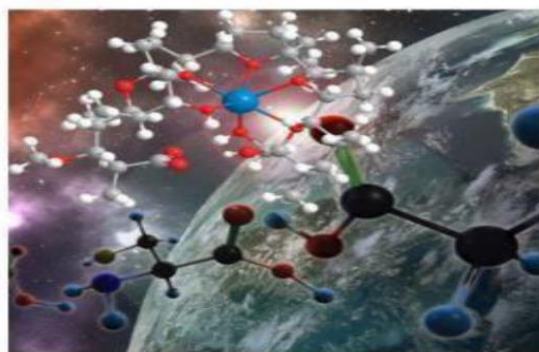


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PHYSICO AND PHYTOCHEMICAL PROPERTIES OF SOME SELECTED NATURAL INDICATORS

R.Gladis Latha*, J. Gincy Priya, H.Felcia, J.S.Blessy, M.Farhana, K.M.Deepika, R.Hensha Riyana

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Abstract

Various indicators are used for different types of titrimetric analysis. Synthetic indicators are very hazardous to the environment and they are of high cost. Natural dyes and pigments in plants show colour changes with variation in pH and these are eco-friendly and cheap. Hence these can be also used as indicators instead of the synthetic ones. In this work, an attempt has been made to utilize the natural sources as indicators and to determine their properties. The extracts of samples *Pyrus malus*, *Vitis vinifera*, *Beta vulgaris*, *Allium cepa*, *Brassica oleracea*, *Impatiens balsamina*, *Clitoria ternatea*, *Hibiscus rosa-sinensis*, *Ixora coccinea*, *Tagetes*, *Mirabilis jalapa*, *Rosa indica* and *Tradescantia spathacea* were taken and the end points in acid base titrations were determined by using these indicators. Physico and phyto-chemical characteristics such as pH, conductivity, phosphate, sulphate, phenols, flavonoids and alkaloids, trace metals like copper, nickel, zinc and lead were determined. All the indicators have shown sharp end points with specific colour changes in acidic as well as basic medium. Most of the indicators have shown acidic pH range and have remarkable conductivity values. Many samples have shown a definite concentration of trace metals. The concentration of sulphate was high in *Hibiscus rosa-sinensis* (2050g/l) and *Mirabilis jalapa* showed high concentrations of phosphate (990mg/l) and sulphate (3000g/l). *Allium cepa* and *Tagetes* exhibited the presence of flavonoids, *Impatiens balsamina* exhibited the presence of alkaloids and *Mirabilis jalapa* and *Tagetes* showed the presence of phenols.

Key words: indicators, hazardous, titrimetric, flavonoids, alkaloids.

Introduction

An indicator is a substance which is used to determine the end points in titrimetric analysis. Normally, the indicator causes the colour of the solution to change depending on the pH. Colours of the parts of the plants express their unique character. Natural dyes and pigments in plants are highly coloured substances and show colour changes with variation of pH [1]. Several organic and inorganic compounds are responsible for this colouring property of parts of the plants such as flavonoids, flavonols, acylated flavonoids, anthocyanins, acylated anthocyanin, quinines, imines, polymethines, naphthoquinones, anthraquinonoids, indigoids, dihydropyrans, diarylmethanes and carotene [2]. Most frequent in nature, anthocyanins are the glycosides of cyanidin, delphinidin, malvidin, pelargonidin, peonidin and petunidin. Some of these compounds show different colours in different pH, and thus, this property can be applied to use them as a natural indicator. Usefulness of some plant flowers as natural acid base indicators have also been demonstrated and studied by various researchers [3]. These alternatives from plant origin are cheaper, readily available, easy to extract, less toxic to users and are eco-friendly. Economic use of pigments of some common flowers as acid/alkali indicators were shown by using *Hibiscus Rosa Sinensis* which contains anthocyanin purple red and the blue and red pigments of flowers were isolated and previously studied [4]. Natural indicators such as litmus to indicate specific pH levels have been developed. The chemical substances in the plant products react with acids or bases resulting in changes at the molecular level which causes their colour to be different at different pH. The change in structure and colour of anthocyanins with the change in pH was reported already [5].

Synthetic indicators are very hazardous to the environment and also harmful to human health. These indicators are of high cost and causes chemical pollution. Hence natural indicators obtained from various plants are considered more important. The end point observed using natural indicators is sharp and same as that of synthetic indicators. Moreover, these are eco-friendly and cheap. Hence an attempt has been made in this work to know about these natural indicators, their physical and phyto-chemical properties and utilize them in future.



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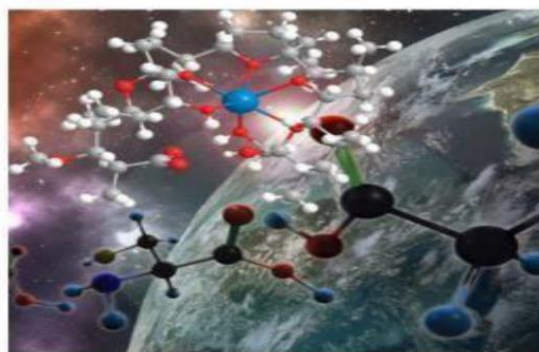


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GREEN SYNTHESIS AND CHARACTERIZATION OF *JASMINUM SAMBAC* USING ZINC OXIDE NANOPARTICLE

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Abstract

The Pharma and healthcare industries now a days highly demand green nano technology, with an objective of developing environmentally safe and non-toxic nano products. These products have fast adsorption rates in diversified fields of anticancer therapy, biocatalysts, cosmetics and others. Zinc oxide nanoparticle is one among them which receives substantial attention in this field because of its unique properties. In this research work, the anti-spasmodic and anti-pyretic properties of the green synthesized zinc oxide nanoparticles of *Jasminum Sambac* along with their spectral properties were studied. The anti-spasmodic and anti-pyretic activities were determined by Shodhanvidhi process. The synthesized nanoparticles were characterized by different techniques like UltraViolet-visible (UV-Vis) and Fourier Transform Infrared (FT-IR) spectroscopy. Results from UV-Vis and FT-IR confirmed the band gap energies (3.37eV and 3.5eV) and the presence of the functional groups -CN, -OH, -C=O and -NH. The spasmodic activity of the extract was studied in isolated guinea Pig ileum model using acetyl choline, nicotine and histamine as agonist. The result shows that the stimulant effect of the histamine 1 µg/ml was decreased by 78.19% while the stimulant effect of acetylcholine 1 µg/ml was decreased by 67.57% and the stimulant effect of nicotine 2 µg/ml was decreased by 84.33%. The antipyretic effect was also examined for 150 ml doses of the extract which showed the maximum antipyretic effect and is far more effective than the readily available standard Paracetamol drug. Thus, the prepared nanoparticles have good future therapeutic applications.

Keywords: *Jasminum Sambac*, spasmodic, pyretic, nanoparticles, substantial.

1. Introduction

Nano technology is one of the important research areas in the field of modern material science. Nanoparticles are applied in various fields such as medicine, catalysis, study, sustainable environment and biotechnology [1,2]. Synthesis of nanoparticles can be carried out by different methods such as green approach, biological methods, irradiation, chemical methods etc. The biological route is commonly preferred as it includes microbial nano synthesis and phytonano synthesis [3]. In addition, Green synthesis of nanoparticles using plant extract may also be preferred due to shorter period of synthesis, cost effectiveness, eco-friendly process, easiness in scalability and use of lesser temperature. Also, it eliminates the generation of hazardous substances that affect human health and the environment.

Metal and Metal oxide nanoparticles pave a wider range of applications due to its electrical, physical, chemical and optical properties. The superior properties of metal nanoparticles are applied in drug delivery, nano biotechnology, targeted delivery, micro fluidics, biosensors and micro arrays, micro engineering etc [4,5]. The multifunctional behavior and dynamic behavior of metal nanoparticles possess good antimicrobial, antibacterial, antipyretic, antispasmodic, anthelmintic, anti-fertility, anti-diabetic, anti-arthritis, cytoprotective, anti-nociceptive properties owing to its unique properties and abundance in nature. Zinc Oxide nanoparticles strongly fit into the cluster of metal nanoparticles. Also, the Zinc Oxide nanoparticles are notable for its non-toxicity, wide direct band gap energy and high excitation binding energy [6,7]. Zinc Oxide has tremendous advantages in various cutting-edge technologies [8,9]. These nanoparticles are used in pharmaceutical carrier systems, clinical applicability, medical diagnostic, gene delivery and nanomedicine [10,11]. When compared to other nanoparticles, the zinc Oxide nanoparticles are of low cost and have lot of applications [12,13].

The green method using plant extracts has drawn consideration as a feasible and



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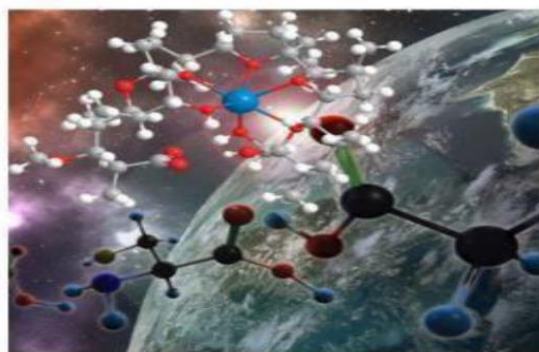


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SYNTHESIS AND CHARACTERIZATION OF NATURAL FIBRE REINFORCED POLYMER COMPOSITES

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Abstract

In the contemporary world, natural fibers reinforced polymer composite (NFRPC) materials are of great interest owing to their eco-friendly nature, lightweight, life-cycle superiority, biodegradability, low cost and noble mechanical properties. NFRPCs are widely applied in various engineering applications and this research field is continuously developing. The pure and natural fiber imposed epoxy composites were prepared by solution casting method. The synthesized pure epoxy sheet and natural fiber doped epoxy composites were characterized by FTIR spectroscopy. The mechanical properties such as tensile strength and flexural strength of developed pure epoxy and natural fiber doped epoxy composites also studied. The hardness and hydrophobic nature of the pure epoxy and natural fiber doped epoxy composites have also been carried out.

Key words : polymer composites, biodegradability, flexural strength

1. Introduction

The versatile characteristic of epoxy and its diversity made it suitable for different industrial applications such as laminated circuit board, electronic component encapsulations, surface coatings, potting, fiber reinforcement, and adhesives [1-4]. However, the pervasive applications in many high-performance field limited the epoxy use because of their delamination, low impact resistance, inherent brittleness, and fracture toughness behavior. The limitations of epoxy can be overcome by incorporation and modification before their industrial applications. The use of natural fibres as reinforcing materials in both thermoplastic and thermoset matrix composites provides positive environmental benefits with respect to ultimate disposability and best utilization of raw materials [5-6]. Currently, modified epoxy resins are extensively used in fabrication of natural fiber-reinforced composites and in making its different industrial products because of their superior mechanical, thermal, and electrical properties [7-8]. Natural fibers-based epoxy composite shows the unique combination of great versatility, high performance, and processing advantages at promising cheaper rates compared with thermoplastics.

2. Methodology

2.1 Synthesis of pure epoxy composites

Polyepoxy resin and hardner were used in this study to develop polyepoxy composites.

2.2 Preparation of Pure epoxy composites

Epoxy resin 30gm and hardner 0.5 gram were poured separately in two beakers. The epoxy resin is continuously stirred with a mechanical stirrer for about 15 minutes. The hardner was then added to the resin and it was mixed by hand stirring. To this, 1 drop of the catalyst is added and mixed. The mixture is then poured into the metal mould. It was kept undisturbed for about 4-5 hours at room temperature. Then the synthesized sheet can be separated from the mould. Thus a fine epoxy sheet was obtained.

2.3 Preparation of Coconut husk epoxy composites

The Coconut Husk of 1 weight of percentage was dispersed into 60 gram of resin and both were mixed by a high speed mechanical stirrer for 3 hours. To this 6 gram of hardner was added and mixed. It is mixed with hand stirring. The mixture is then poured into the metal mould and kept undisturbed for about 4-5 hours at room temperature. Then the synthesized sheet can be removed from the mould. Thus a fine and neat coconut husk epoxy sheet was obtained.



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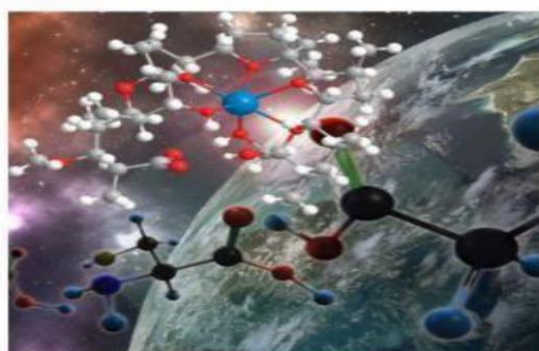


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SYNTHESIS, CHARACTERISATION AND BIOLOGICAL ACTIVITIES OF SCHIFF BASE METAL COMPLEXES

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Abstract

The Schiff base ligand, derived from Vanillin with L-Alanine and Ni(II) and Cu(II) complexes were synthesized. The synthesized ligand and its complexes were characterized by molar conductivity, magnetic moment, FT-IR, UV-vis, XRD and thermal analysis. The conductivity data of the complexes confirmed their non-electrolytic nature. The analytical data shows that the metal to ligand ratio is 1:1. The molar conductance data reveal that all the complexes are non-electrolytes. Square-planar geometry was suggested for Cu(II) and Ni(II) complexes. The TGA findings supported that the stability and decomposition properties of the metal complexes were entirely distinct from Schiff base ligand. The thermogram showed decomposition of all investigated metal complexes above 200 °C in three, four or five steps, and indicated the high thermal stability of these complexes. According to XRD patterns, the particles of these complexes were located at the nanoscale. The antimicrobial activity of the ligand and its complexes was examined against a variety of pathogenic bacteria and fungi including *Escherichia coli*, *Staphylococcus aureus* and *Candida albicans*. The data obtained revealed that the metal ion in the complexes enhanced the antimicrobial activity compared to the free ligand.

Keywords: Schiff base, NMR, XRD, UV-Vis, *Escherichia coli*

1. Introduction

Metal complexes with Schiff base ligands have been extensively investigated as antimicrobial and anticancer agents. Schiff Transition base complexes derived from amino acids are important due to their ability to possess unusual configurations and biological importance [1-3]. Schiff bases have appeared to be important intermediates in a number of enzymatic reactions involving interaction of an enzyme with an amino- or carbonyl group of the substrate. Polydentate ligands such as Schiff bases, assisted by metal ions, provide highly organized supramolecular metal complexes. Such complexes possess binding sites and cavities for various cations, anions, and organic molecules [4]. Imidazole-2-carboxaldehyde with amino acids derivatives are reported to exhibit analgesic, anti-inflammatory, anticancer and herbicidal activities. Some of the schiff base complexes containing N and O donor atoms are effective as stereospecific catalysts for oxidation, reduction, hydrolysis, biocidal activity, and other organic and inorganic transformations [5]. These complexes are considered as good models to study metal-ligand interactions in metalloproteins and metalloenzymes [6]. In addition, some of these complexes have been shown to exhibit interesting physical, chemical, and potentially beneficial chemotherapeutic properties [7]. Therefore, considering the above facts and continuing our interest in this field, the present work reports a study on the synthesis, characterization and antimicrobial properties of Ni and Cu complexes with the Schiff base derived from Vanillin and L- Alanine.

2. Experimental Methods

Synthesis of Schiff base

Schiff base ligand was prepared by reacting equimolar amounts of L-Alanine (0.2mol,2.6g) and Vanillin (0.1mol,0.94g) in 150ml of absolute methanol. The reaction mixture was refluxed on a steam bath at 90 to 95oC for 1 hour. The reaction was examined by TLC with time to time till completion. The solvent was partially evaporated and the yellowish mass product was precipitated by cooling and filtered off, washed with distilled water, dried, recrystallised and finally preserved in a desiccator.



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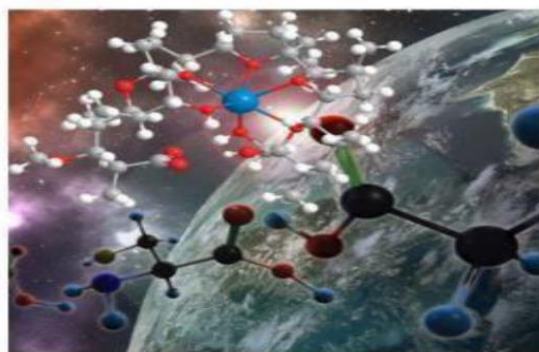


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NATURAL ACID CATALYZED SOLVENT FREE SYNTHESIS OF ALDIMINE FROM BILIMBI FRUIT EXTRACT AND ITS ANTIBACTERIAL ACTIVITY

K.R. Thiruthika, J. Antony Jethisha, S. Sindhu, B. Stephy Rose, W. Vibishma, J.V. Vijayadharshini and Sheeba Daniel*

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Abstract

Aldimines constitute a class of pharmaceutical and medicinally important molecules. The conventional methods for the synthesis of aldimines require long reaction times and use of organic solvents. The utilization of green chemistry techniques is dramatically reducing chemical wastes and reaction time as recently has been proven in several organic synthesis and chemical transformations. The aim of the present study is to synthesise an aldimine from vanillin and aniline using bilimbi fruit extract. The aldimine synthesised from bilimbi fruit extract is characterized by UV-Visible and FT-IR spectral techniques. The antibacterial activity of the synthesised aldimine is tested against three bacteria and it shows slight activity on *Escherichia coli*, *Bacillus subtilis* and *Pseudomonas aeruginosa*. Compared with traditional methods, this method is simple, more convenient, eco-friendly and shows maximum efficiency with reduced reaction time.

Keywords: Green synthesis, Bilimbi fruit extract, Aldimine, Characterization, Antimicrobial activity

1. Introduction

Green chemistry approach is an eco-friendly approach and has tremendous application for the synthesis of various organic compounds and key intermediates in recent past. This technique involves as an alternative reaction media to replace hazardous and expensive solvents routinely used in organic synthesis [1]. Organic reactions under solvent-free conditions have gained in popularity in recent years, since the majority of solvents are either toxic or flammable and add considerably to the cost of an overall synthesis. These solvent-free reactions usually need shorter reaction time, simpler and more efficient work up procedures, more improved selectivities and easier separations and purifications than conventional solvents [2]. Recently fruit juice is known to be potential organic solvents for the synthesis of compounds of pharmaceutical interest [3]. Fruit juice is being used on regular basis in various organic transformation reactions [4]. The widespread applications of different fruit juices are due to their non-toxic, safe, inexpensive and environmentally benign nature.

Aldimines are important intermediates for the synthesis of various bioactive products and they are used as fundamental materials for the synthesis of various Schiff base ligands which are used as chiral auxiliaries in asymmetric synthesis [5]. Aldimines have been reported to show a variety of biological actions by virtue of the azomethine linkage, which is responsible for various antibacterial, antifungal, herbicidal and clinical activities [6,7]. Based on the literature survey, the present work focusses on the solvent free synthesis of aldimine from vanillin and aniline using bilimbi fruit extract. Bilimbi extract contains several chemical constituents like vitamins, tannins, alkaloids, terpenoids and polyphenols. The aldimine synthesised from bilimbi fruit extract is characterized by UV-Visible and FT-IR spectral techniques. The synthesised aldimine shows slight activity on selected bacteria *Escherichia coli*, *Bacillus subtilis* and *Pseudomonas aeruginosa*.

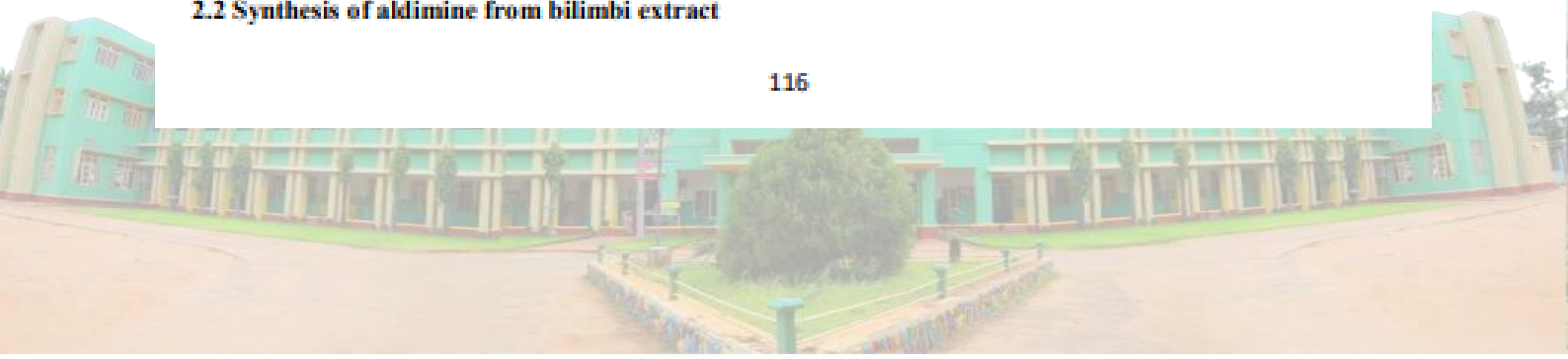
2. Materials and Methods

Fresh and ripened bilimbi fruit were obtained from the local market. Vanillin and aniline used for the synthesis of aldimine were procured from Merck. Double-distilled deionized water was used for the preparation of the bilimbi fruit extract.

2.1. Preparation of bilimbi fruit extract

Ripened bilimbi was used for the preparation of the extract. 25 g of this ripened fruit was thoroughly washed with distilled water, dried and cut into small pieces. Grind the pieces by a pestle and mortar and the resulting extract was filtered using Whatmann filter paper. The filtrate was collected and then centrifuged for about 8,000 rpm for about 10 minutes. The supernatant extract was collected and used for the synthesis of aldimine.

2.2 Synthesis of aldimine from bilimbi extract





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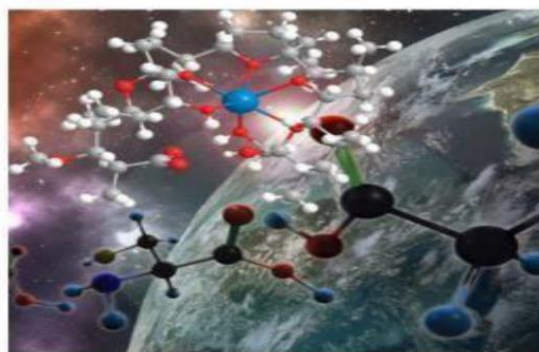


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INCLUSION COMPLEXES - A VIABLE ROUTE TO SEPARATION OF CONTAMINANTS FROM WATER

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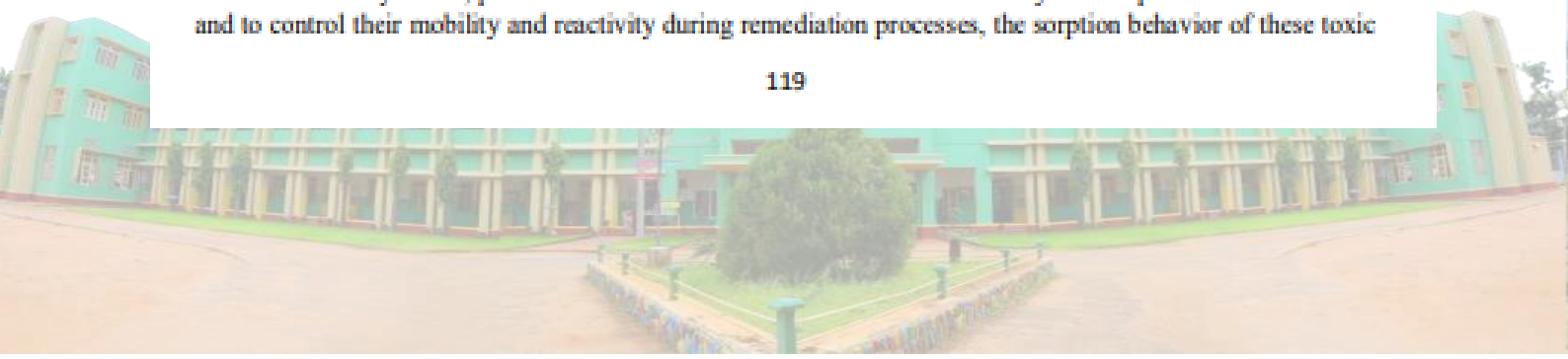
Abstract

Nitrophenols are generally used as intermediates in the synthesis of dyestuffs, pharmaceutical products, pesticides and herbicides. They are highly toxic to animals and human community and of environmental concern. Inclusion of 2-Methyl-4-nitrophenol with α -Cyclodextrin may be considered as a safer means to separate the traces of these compounds present in the environment. The inclusion complexes prepared are characterized using different techniques. The inclusion complexes in solution state are characterized by UV-Visible spectrophotometer(UV-Vis) and fluorimetry. Inclusion complexes in solid state are characterised by Fourier Transform Infra Red Spectroscopy(FTIR)and Scanning Electron Microscopic(SEM). Therefore complexation of 2-Methyl-4-nitrophenol and 4-Methyl-2-nitrophenol with α -CD can be considered as a better option and suitable measure for separation of contaminants from the environment.

Key Words: 2-Methyl-4-nitrophenol, inclusion complexes, α -Cyclodextrin, UV-Visible spectrophotometer,

1. Introduction

Cyclodextrins are capable of incorporating a high range of guest molecules based on hydrophobic and geometrical cavities. They have a toroidal shape with an internal hydrophobic surface and an external hydrophilic surface and they are acting as a host molecule. These cyclodextrins are well known as they form stable hostguest inclusion complexes which have the interesting property of including organic, inorganic and biological molecules in their cavities[4,5] Once the inclusion compound is formed, the stability of the guest molecules increases due to the binding forces (van der Waals attractions, hydrogen bonding, hydrophobic interactions, etc.) between the host (CDs) and guest molecules[6] The chemical properties of cyclodextrins combined with their non-toxic character to humans have led to their use in pharmaceuticals, as food additives as well as in the environmental de-contamination procedures of wastewater, aquifer, air, and soil [7,8]. Particularly cyclodextrins and their derivatives have been use to remove contaminations by the formation of inclusion complexes or to enhance the solubility of several compounds[9-12]. Nitrophenols belong to major organic pollutants that have been analysed in the environment [13]. Nitrophenols, coming from pesticide degradation products, car exhaust, and industrial waters are listed as pollutants with great potential toxicities of carcinogenesis, teratogenesis, and mutagenesis [14] because of their detriment and vast scale distribution in the ecological environment. It has been used in making dyes, wood preservatives, explosives, insect control substances, and photographic developer. It is released into the air, water and soil and environment from landfill leaks and accidental spills. Consequently, due to the harmful effects of these organic compounds, the waste waters containing them must be treated before being discharged to receiving water bodies. The secondary biological processes are commonly used for domestic and industrial waste water treatment, but their efficiency is not satisfactory at high pollutant concentration [15]. 2-Methyl-4-nitrophenol is suitable as a target compound in the study on measurement of methyl nitrophenol concentrations and stable isotope ratios in the atmospheric particulate matter [16] and as an internal standard in the determination of monoaromatic nitro compounds in atmospheric aerosols using spectrometry (HPLC/MS/MS) method [17]. It may also be used as a starting material in the synthesis of 2-bromo-4-nitro-6- methylphenol [18] is used as intermediate in dyestuffs, pesticides etc. In order to assess the fate of 2-Methyl-4-nitrophenol in waste water and to control their mobility and reactivity during remediation processes, the sorption behavior of these toxic





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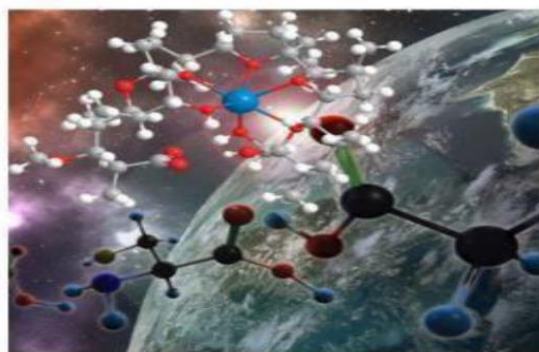


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PHYTOCHEMICAL ASSESSMENT AND INVITRO BIOLOGICAL ACTIVITY OF ANDROGRAPHIS PANICULATA LEAVES USING ETHYL ACETATE EXTRACT

Anto Nimisha A¹, Anie Jenifer M², Antilin Princesa M^{2*}

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ABSTRACT

Nilavembu is one such Siddha herb that has innumerable immune-enhancing properties like anti-pyretic, cholagogue, digestive, hepatoprotective and anti-inflammatory activity. The botanical name of Nilavembu is *Andrographis paniculata*, belongs to the family Acanthaceae. The present work deals with the study of phytochemical constituents of ethyl acetate extract of *Andrographis paniculata* leaf and also checked its antimicrobial activity. The results of phytochemical screening showed the presence of minerals, flavonoids, tannins, alkaloids, saponins, proteins and phytosterols. Further, antimicrobial activity was tested by disc diffusion method and also measured in terms of zone of inhibition. The antimicrobial data demonstrated that *Andrographis paniculata* having more antimicrobial activity than compared with the standard. Hence, the leaves of *Andrographis* can be used as a medicine for curing many diseases.

Keywords: *Andrographis paniculata*, antimicrobial activity, Phytochemical constituents.

1. Introduction

The World Health Organization recognizes that more people mainly rely on traditional medicine for improving immunity in health and to prevent them from various hazardous ailments [1]. Using the plants and the plant extracts, people prepared and cured even the most dangerous diseases known as Herbalism. Traditional medicines occupy an essential place in the history of diseases and it believed that those medicines are reliable based on their practical experiences. Siddha proudly takes the credit for being of the oldest medicinal system in the world. Siddha means established truth in every sphere of knowledge, including the medicinal field [2]. Siddha drugs are usually prepared from natural resources like plants, animals and minerals which are available in abundance in the world [3]. Generally, the medicinal plants offer substances that reveal therapeutic effects, and used as precursors for semi-synthetic drugs [1]. The non-nutrient substances present in the plants are known as phytochemicals. It serves as protecting agent in the plants from microbial infections or pest infestations [4]. Phytochemicals are beneficial to boost up immunomodulatory responses and also provide immunity against many diseases. Some phytochemicals are known to reveal medicinal and physiological activities which are phenols, tannins, flavonoids, saponins, carbohydrates, alkaloids, phytosterols etc. In the current scenario, phytochemical components of medicinal plants should be identified and separated for curing diseases [5]. Generally, phytochemical screening of plant extract gives the presence of alkaloids, steroids, terpenoids and cardiac glycosides. Approximately 20% of the known plants have been used in pharmaceutical studies, impacting the healthcare system in positive ways such as treating cancer and other harmful diseases [6]. Nilavembu is used to treat different types of intermittent fever, which mostly occurs in ailments like malaria, dengue fever, chronic fever, and chikungunya. The botanical name of Nilavembu is *Andrographis paniculata*, belongs to the family Acanthaceae. Sometimes, chemicals are derived from the plants and that process is known as Phytochemistry. Many discoveries have been accomplished by phytochemical research. The plants create a large number of various bioactive composites [7]. Andrographolide, the major constituent extracted from the leaves of the plant which is a bicyclic diterpenoid lactone implicated towards its pharmacological activity [8]. Nilavembu Kudineer Churnam touted as Nilavembu Kashayam, this powdered formulation is a well-known Siddha medicine in the southern states of the Indian subcontinent. *Andrographis paniculata*, has been used in Siddha and Ayurvedic medicine and is promoted as a dietary supplement for cancer prevention and cure [9]. Nilavembu Kashayum plays an important role in purifying blood because of its antioxidant and antimicrobial properties [10]. Its bitter taste helps to flush toxins from your blood which leads to relieve skin problems. It is used extensively in managing



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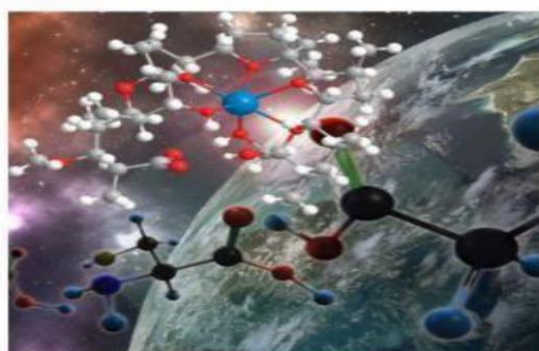


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PLANT MEDIATED SYNTHESIS OF SILVER NANOPARTICLES USING HIBISCUS ROSA-SINENSIS AND TABEBUIA CHRYSANTHA EXTRACTS

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Abstract

In this era of nanotechnology, research on nanomaterials has become the subject of interest for many researchers and academia due to its technology, rapid improvements and innovations in various aspects of everyday lives. The advantage of using plants for the synthesis of nanoparticles is that they are easily available, safe to handle and possess a broad variability of metabolites that may aid in reduction. In this highlight, we aimed to synthesis silver nanoparticles by using leaves of *Hibiscus rosasinensis* and flowers of *Tabebuia chrysantha* in an eco-friendly way without using any toxic chemicals. The synthesized silver nanoparticles show notable antimicrobial activity against human pathogens. Therefore, current study justified the development of eco-friendly process for the synthesis of silver nanoparticles using plant extracts which is an important step in the field of application of nanotechnology.

Keywords: Green synthesis, *Hibiscus rosasinensis*, *Tabebuia chrysantha*, antimicrobial activity

1. Introduction

Nanomaterials are materials that consist of nanoparticles with improved physical and chemical properties such as lower weight with higher strength. These can be categorized as (i) one dimensional nanomaterials having one dimension less than 100 nm (thin films or surface coatings), (ii) two dimensional nanomaterials (nanowires, carbon nanotubes, inorganic nanotubes, biopolymers, nanoribbons), (iii) three dimensional nanomaterials (fullerenes, dendrimers) [1-5] and (iv) zero dimensional nanomaterials (quantum dots) [6]. The dimension factor is considered as one of the most important aspects in nanotechnology. Nanotechnology is able to control and manipulate matter at the atomic scale. The most effectively studied nanoparticles in the recent past are those made from the noble metals such as silver, gold and platinum etc. These nanoparticles find vast applications in various fields ranging from medical to physical fields.

Silver nanoparticles are widely used for its unique properties in catalysis, chemical sensing, biosensing, photonics, electronic and pharmaceuticals. Silver nanoparticles have a great potential for use in biological including antimicrobial activity. Biological synthesis of nanoparticles by plant extracts is at present under exploitation as some researchers worked on it, and testing for antimicrobial activities. The advantage of using plants for the synthesis of nanoparticles is that they are easily available, safe to handle and possess a broad variability of metabolites that may aid in reduction. A number of plants are being currently investigated for their role in the synthesis of nanoparticles [7-9]. In this work, synthesis silver nanoparticles by using leaves of *Hibiscus rosasinensis* and flowers of *Tabebuia chrysantha* in an eco-friendly way without using any toxic chemicals.

2. Materials and Methods

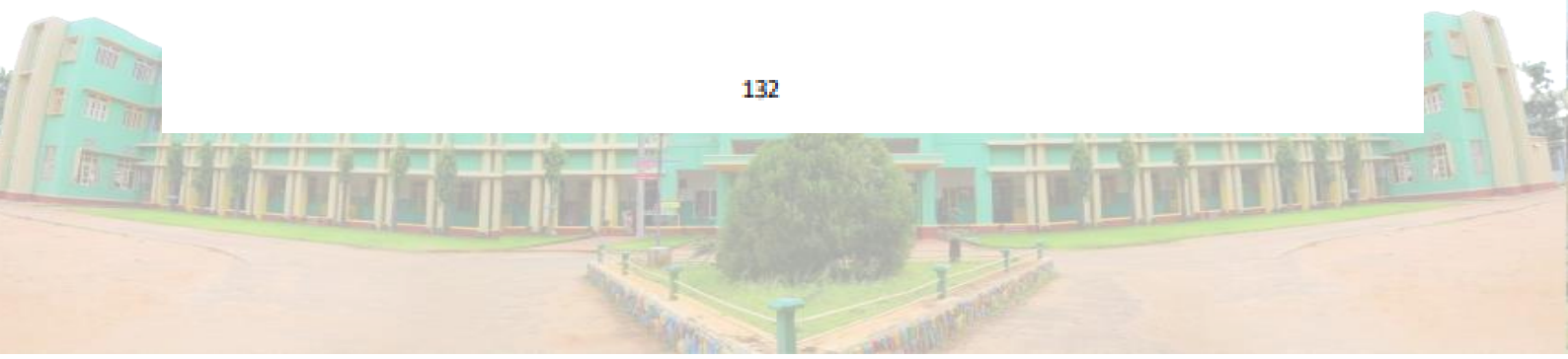
2.1. Materials

- *Hibiscus rosa-sinensis* leaves
- *Tabebuia chrysantha* flowers
- Silver nitrate
- Distilled water

2.2. Procedure

2.2.1. Preparation of plant extraction

The fresh leaves (20 gm) of *Hibiscus rosa-sinensis* samples were collected. Collected fresh leaves were washed, finely cut and soaked in 100 ml boiling distilled water for 5-10 minutes and was filtered through whatman filter paper no.1 [10].





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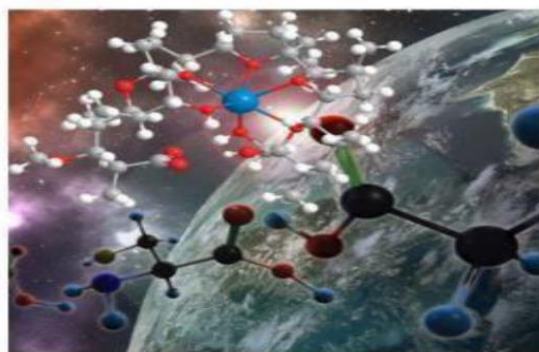


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A STUDY ON ANTIBACTERIAL ACTIVITY AND PHYTOCHEMICAL SCREENING OF SENNA AURICULATA FLOWERS

Divya Peter, F.D.JerslinFinney, M.Shirly Treasa

Department of Chemistry, Holy Cross College (Autonomous), Nagercoil.

Abstract

Senna auriculata [avarampoo in tamil] which is a backbone of all traditional plants are used to treat diabetes, microbial diseases, urinary discharge and other irritations. The flowers of the plant were extracted with both ethanol and aqueous solution by incubation shaking method. The phytochemical screening and antimicrobial activities were studied. Since results were good, the samples were initiated to fourier transform infrared spectroscopy. Presence of phytochemicals such as alkaloids, flavanoids, phenol, protein and saponins were identified. The ethanol extract of *Senna auriculata* flowers show good antibacterial activity against bacterial microorganisms such as *E.Coli*, *Bacillus subtilis*, *Pseudomonas Auregenosa* and *Streptococcus aureus* proves that flowers of *senna auriculata* has the power to perform antimicrobial medications.

Key words: *Senna auriculata*, phytochemicals, ethanol extract, aqueous solution, microbial activity

1. Introduction

India has a great heritage of traditional system of medicines like Ayurveda, Siddha, and Unani, where hundreds of medicinal plants are being used to treat various diseases with their known ethnopharmacological evidences. *Senna Auriculata* in the family of Fabaceae is one the medicinal plants that has been used traditionally in Ayurveda, Siddha, and Unani since the 15th century. *Senna auriculata* is found in wooden grasslands up to a height of 500 m. It grows well in areas with annual temperature range of 15–28°C and it needs full sun for its growth. It is a branched shrub with height of 1.5–5 m, trunk diameter of 20 cm and brown lenticellate bark [1]. Flowers are bright yellow and irregular and large (50 mm) and have axillary raceme inflorescence, 2–8 flowered [2]. Flowers are bisexual, zygomorphic, pentamerous, 4–5 cm; petals free, imbricate, unequal and green turning to brown when mature. The plant has been reported to possess antipyretic hepatoprotective, antidiabetic, antiperoxidative and antihyperglycaemic and microbicidal activity [3].

2. Materials and Methods

2.1. Plant material

The flowers of *Senna auriculata* plant were washed thoroughly with distilled water about 2-3 times and dried. After drying, samples were grounded to get fine powder and the powdered samples were stored in air tight plastic container with proper labelling.

2.2. Preparation of Plant extract

2.2.1. Aqueous extract

The aqueous and ethanolic extracts were prepared by soaking one gram (1g) of dried powder in 20mL of water and 20mL of ethanol respectively and kept in shaking incubator. The mixture was then filtered through the Whatmann No.1 filter paper to ensure that no particles were present in the solution and the extract was collected.

2.3. Phytochemical screening

Phytochemical screening of plant extract was carried out qualitatively for the presence of terpenoids, phenol, flavonoids and steroids.





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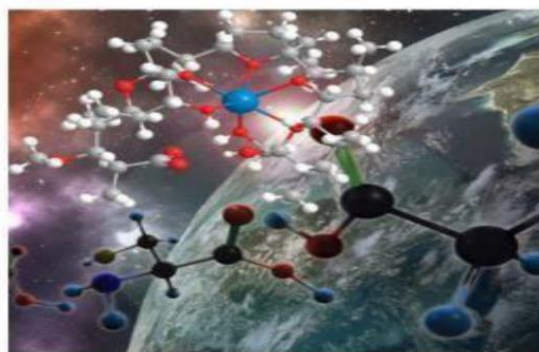


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COMPARISON OF GROSS ALPHA AND GROSS BETA ACTIVITIES OF SAND SAMPLES IN KANYAKUMARI AND TIRUNELVELI DISTRICTS

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Abstract

The introduction of radioactive substances into the environment is harmful to life due to the emission of ionizing radiations. Even though the radioactive contamination of the environment is relatively small, it requires a great attention because of extreme degrading effects of ionizing radiation on living tissues. Soil is one of the major sources of radiation exposure to the population through the transfer of radionuclides into the environment. The issues related to the radioactively contaminated soils are being considered as a chemical contamination related to ionizing radiation. The adverse effects are in correlation with the quantity of absorbed energy and the penetrating power of radiation. The study of natural radioactivity in marine and coastal environments is of significant importance for better understanding of the life of people around that area. The sampling sites were selected randomly to cover the coastal areas in Tirunelveli and Kanyakumari Districts. Ten samples were collected from each district. The radioactivity of the sand samples were measured using Geiger Muller counter after recording their background radiations. The gross alpha activity of Kadiyapattanam (10.6150 Bq/g) and the gross beta activity of Enayamputhenthurai (2.1482 Bq/g) were higher than other samples in Kanyakumari District. Moreover in Tirunelveli district, the alpha (5.1087 Bq/g) and the beta (143.214 Bq/g) activities were found to be more in Kudankulam.

Key words: radioactivity, contamination, environment, radionuclides, penetrating

1. Introduction

Among the various types of pollution, radioactive pollution is one of the most serious and threatening one. Radionuclides are found in air, water, soil, rock and everywhere in the universe. Radioactive contamination occurs when the emission of radioactive substances into the environment are in undesirable levels [1]. Natural radioactivity arises mainly due to the radioactive nuclides present in different amounts in sediments, water and rocks. Natural Radioactive concentration depends mainly on geological and geographical conditions and appears at different levels in rocks from different geological regions (UNSCEAR, 2000). Rocks contain naturally occurring radionuclides such as ^{238}U , ^{232}Th and ^{40}K [2]. Such type of existence is harmful to life due to the emission of ionizing radiation and is potent enough to cause damage to tissues and DNA in genes. The south west coastal region of Kanyakumari district is witnessed as a naturally high background radiation area. The deposits of monazite on the coastal areas of Tamil Nadu are formed due to the weathering of rocks in Western Ghats [3]. Beach sand along the coastal regions of Kanyakumari district contains heavy minerals like ilmenite, rutile, zircon, monazite and sillimanite. The existence of ^{232}Th and ^{238}U are mainly due to the monazite bearing black sands. Almost all the rocks contain naturally occurring radionuclides such as ^{238}U , ^{232}Th and ^{40}K [4]. ^{226}Ra , an alpha emitter with a half life of 1600 years and ^{228}Ra , a beta emitter with a half life of 5.8 years are also existing along with these radionuclides [5]. Many residents along the coastal areas are prone to various diseases which are mainly caused by ionising radiations. Hence it is imperative to calculate the background radiations and the radioactivity along these radiative spots. This study aims, to determine the gross alpha and the gross beta activities in the sand samples, to compare the radioactivities of the samples from Kanyakumari and Tirunelveli Districts and to study the effects of radiation along the coastal areas.





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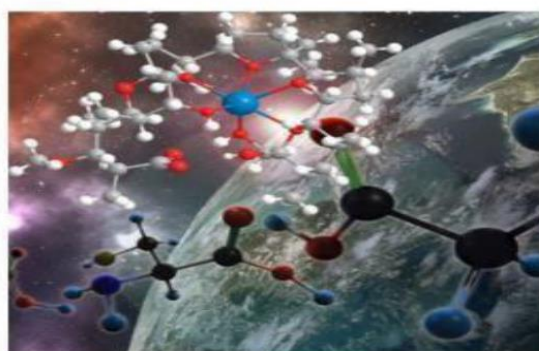


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A STUDY OF ROLE OF CHITOSAN FILMS IN TREATING LABORATORY EFFLUENTS

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Abstract

A chemical lab is a place where large amount of waste is generated. The chemical reactions carried out in any laboratory results in the release of toxic chemicals into the environment which causes environmental pollution. Pollutants released are in the form of solid, liquid and gases. Among these liquid waste plays a major threat to the environment as they spoil the quality of land as well as drinking water resources. Chitosan, a biomaterial obtained from the shells of crustaceans is known to possess the ability to absorb heavy metal ions and dyes. This study employs the adsorption property of chitosan for the treatment of laboratory effluents before releasing them into the environment. The adsorbing capacity of chitosan was studied by filtering nickel chloride solution through filter paper alone and one, two and three films of chitosan along with filter paper. The lab effluents were also filtered through similar forms of chitosan. The concentration of the effluents before and after filtration through the chitosan films are compared using UV – Vis and FTIR techniques. The results suggested that chitosan can be modified as films to remove the toxic effluents coming out of laboratories.

Keywords: Pollution, Chitosan, lab effluents, adsorption, metal ions

1.Introduction

Chemical reactions carried out in laboratory leads to the generation of large amount of waste products. Some of the chemical experiments carried out in a laboratory include gravimetric estimation, titration, organic and inorganic preparations and analysis. All such chemical experiments obviously lead to the generation of large amount of waste. Laboratory effluents may contain toxic chemical elements like ions of Cu, Ni, Zn, Pb, Hg and Cd, organic molecules such as methyl chloride, alcohol, organometallic compounds and so on. These metal ions diffuse into the soil and water resources and slowly enter into the biological system of living organisms causing severe disorders and diseases. The toxic nature of mercury was recognized in the year 1953 through an incident in which 52 people living in a fishing village in Japan died due to the intake of fish contaminated by mercury. The outbreak of cadmium occurred in Japan in the form of itai-itai disease which makes the bones fragile and the patient dies suffering from immense pain. Exposure to cadmium also leads to destruction of testicular tissue and red blood cells. Intake of copper from food or water induces thalassemia, hemochromatosis, cirrhosis, atrophy of liver, tuberculosis and carcinoma. Lead is another toxic element which interferes with the hemesynthesis, prevents haemoglobin synthesis and thereby affects the oxygen transport within the body. Organic lead compounds are suspected to cause genetic modifications[1].

Chemical wastes are hazardous in nature. Thus, when a chemical experiment is carried out, one should make sure that the reaction results in minimal waste production. However, once the waste has been formed, one should make sure to treat the waste properly before releasing it out into the environment. Sorption technology provide an attractive pathway for the removal of elements from waste water. Various forms of chemical sorbents and bio sorbents have been found to effective metal remover from the waste water [2,3,4,5]. As bio adsorbents pave an eco-friendly, sustainable, low cost and effective method for removal of toxic elements from the waste water, the subject has been studied widely by many researchers. Chitosan is one such bio-adsorbent which has the potential to remove heavy metal ions from waste water.





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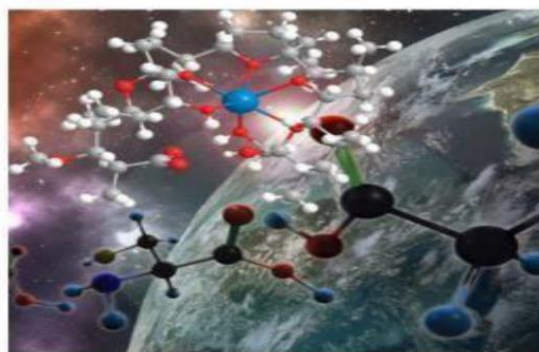


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GREEN SYNTHESIS, CHARACTERIZATION AND COMPARISON OF ANTIBACTERIAL ACTIVITY OF COBALT OXIDE NANOPARTICLES SYNTHESISED USING AQUEOUS AND ALCOHOLIC PLANT EXTRACTS

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Abstract

Nanoparticles (NPs) play a vital role in this modern world. On account of its varied applications they are prepared in a large scale using various methods which leads to environmental deterioration. Medicinal plants contain substances which can act as capping and reducing agents for the synthesis of NPs. This ecofriendly and economic way of synthesis of NPs are superior to the traditional methods. Aqueous and ethanolic leaf extracts of *A. indica* (*Acalypha indica*) *C. occidentalis* (*Cassia occidentalis*) and *C. viscosa* (*Cleome viscosa*) are used as green reducing agents for the synthesis of cobalt oxide NPs. The formation of NPs are proved using UV-Vis spectroscopy. The synthesized cobalt oxide NPs showed good antibacterial activity when compared with control streptomycin. Maximum antibacterial activity against gram negative *E. coli* is exhibited by cobalt oxide NPs (36nm) synthesised using alcoholic extract of *C. viscosa*. Maximum antibacterial activity against Gram positive *B. subtilis* is shown by cobalt oxide NPs (33.5nm) synthesized using *C. viscosa* aqueous extract, ecofriendly

Keywords: ecofriendly, cobalt oxide, antibacterial, gram positive, gram negative.

1. Introduction

Over the last decade, novel synthesis approaches/methods for nano materials such as metal NPs, quantum dots (QDs), carbon nanotubes (CNTs), graphene, and their composites have been an interesting area in nano science and technology. To obtain nano materials of desired sizes, shape, and functionalities, two different fundamental principles of synthesis namely top down and bottom up methods have been investigated in the existing literature. In the former, nano materials / NPs are prepared through diverse range of synthetic approaches like lithographic techniques, ball milling, etching, and sputtering. The use of a bottom up approach also includes many methods like chemical vapor deposition, sol-gel processes, spray pyrolysis, laser pyrolysis, and atomic/molecular condensation [1]. Green synthesis are required to avoid the production of unwanted or harmful by-products through the build-up of reliable, sustainable, and eco-friendly synthesis procedures [2]. The use of ideal solvent systems and natural resources is essential to achieve this goal.

Among the available green methods of synthesis for metal/metal oxide NPs, utilization of plant extracts is a rather simple and easy process to produce NPs at large scale relative to bacteria and/or fungi mediated synthesis. These products are known collectively as biogenic NPs.

The application of plant extracts is more effective and practical, easy for the anti-corrosion and the quantity control of the product, but usually having higher cost compared general extract. The aqueous and ethanolic leaf extracts of three medicinal plants *C. viscosa*, *A. indica*, *C. occidentalis* are selected for this study.





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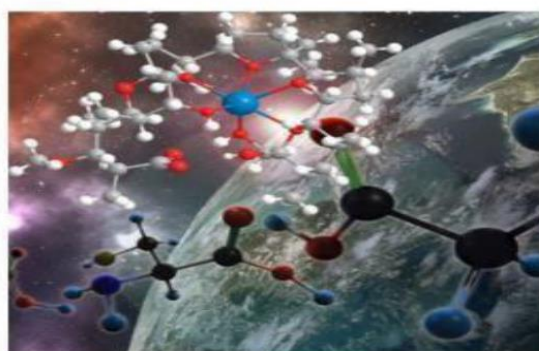


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Abstract

Our environment is blessed with materials that satisfy the needs of the society. Nanoparticles (NPs) which play a dominant role in enhancing the life of mankind can be synthesized in a ecofriendly green route by using aqueous and alcoholic extracts of plant leaves. The leaf extracts of medicinal plants *Acalypha indica* (*A. indica*), *Cassia occidentalis* (*C. occidentalis*) and *Cleome viscosa* (*C. viscosa*) are used as green reducing agents for the synthesis of chromium oxide NPs. The NPs are characterized using UV-Vis spectroscopy and their antibacterial activity against gram negative *E. coli* and gram positive *B. subtilis* are analysed. The results shows that all the plant leaf extracts show good antibacterial activity. Out of the three plant extracts, aqueous extract of *A. indica* possess maximum antibacterial activity against gram negative *E. coli*. Maximum antibacterial activity against gram positive *B. subtilis* is shown by *C. viscosa* aqueous extract.

Key words: Ecofriendly, antibacterial activity, *Acalypha indica*, *Cassia occidentalis* and *Cleome viscosa*

1. Introduction

Plants are the primary producers which are the source of many organic substances. Aqueous and ethanolic leaf extracts of three medicinal plants *C. viscosa*, *A. indica*, *C. occidentalis* are selected for this study. The whole plant of *C. viscosa* widely used in traditional and folkloric systems of medicine. *C. occidentalis* is an ayurvedic medicinal plant used as a traditional medicine for the treatment of various diseases [1]. This plant extracts are known to have antibacterial, antifungal, antimalarial, anti-inflammatory, antioxidant, hepatoprotective and immunosuppression activity. This plant is widely used for various therapeutic purposes, it contains anthraquinone which has purgative action. *A. indica* leaves are used in the traditional medicine of India as a jaundice remedy [2].

The biological methods are now widely being used because in case of chemical methods. Chemicals used can be highly toxic and the products are not friendly to the environment. Moreover, this method does not require expensive, harmful and toxic chemicals [3].

Antibiotics have been the preferred treatment method for bacterial infections because of their cost-effectiveness and powerful outcomes. Investigation of the antibacterial mechanisms of NPs is very important for the development of more effective antimicrobial materials.

2. Materials and Methods

2.1 Preparation of plant extract

The fresh leaves of *A. indica*, *C. occidentalis* and *C. viscosa* were selected for the study. The leaves were crushed and mixed in 250ml of distilled water. It was heated for 1 hour and filtered. The ethanolic extract of the leaves were prepared by using Soxhlet extractor.

2.2 Synthesis of NPs using plant extracts





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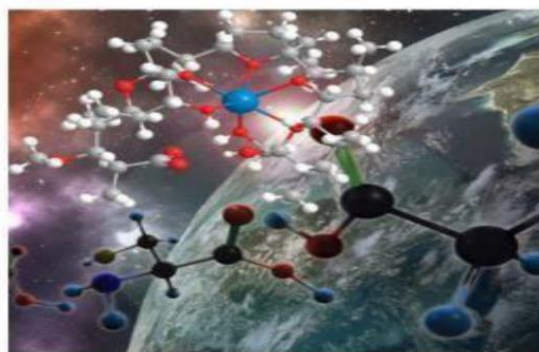


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ANTI-CANCER ACTIVITY FROM SEaweEDS TURBINARIA CONOIDES USING SILVER, ZINC AND GOLD NANOPARTICLES.

S. Vanakkam¹, Dr. S. Ajith Sinthuja^{*2} and Dr. Y. Christabel Shaji³

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Abstract

The cytotoxicity of biologically produced nanoparticles of gold and silver towards MDA-MB-231 breast cancer cells from humans have been reported in this work. These nanoparticles were created through biological synthesis using extract of brown seaweeds turbinaria conoides. Within thirty minutes, nanoparticles of gold and silver were found to be forming, and the synthesis of nanoparticles was confirmed using a variety of XRD, FE-SEM, TEM, and UV-vis characterisation examinations. Ag, Zn and Au Nps were tested in 1-100mg/ml concentration using the MTT assay, acridine-orange and ethidium-bromide (AO/EB) twin spotting, caspase-3, and DNA fragmentation tests. The apoptotic properties of the nanoparticles generated from the plant extract were validated by DNA strand breakage and caspase-3 activation tests, and the cytotoxic effects were most pronounced at a dosage of 100mg/ml. Clinical trials are required to fully evaluate the efficacy of biologically generated Breast cancer treatment with metallic gold and silver nps, although the results of the current study suggest that they hold great promise in this regard.

1. Introduction

In recent years, the production and characterisation of nps have received speeding up because of their enormous ratio of A ratio of larger surface to maximum. As a result, nanoparticles display features that are distinct from those of their macro versions. Moreover, nanoscience has the potential to change biological research by creating new and more efficient diagnostic and therapeutic devices. Numerous nanoparticles of noble metals, silver, gold, copper, and platinum manufactured using physiological, biological, and chemical techniques [1]. The chemical and physical approaches for manufacturing nanoparticles have numerous drawbacks and are not environmentally friendly. Therefore, scientists from around the world have sought out novel and environmentally friendly nanoparticle synthesis techniques.

In addition, it has been known for some time that biological systems can reduce metallic ions into nanoparticles, and numerous researchers have lately revealed the biologically active manufacture nanogold, nanosilver employing a variety of bacteria, plants, fungi. [2,3].



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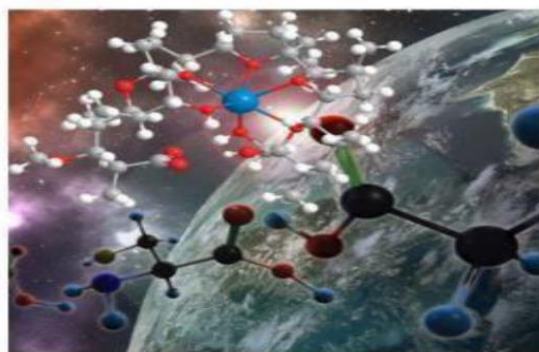


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THE INCORPORATION OF BIMETALLIC Ni₂ NANOPARTICLES INSIDE THE PORES OF MIL-101 FUNCTIONING AS CATALYST FOR THE DEHYDROGENATION OF HYDROUS HYDRAZINE BY SYNERGISTIC EFFECT

Hatin Betscha A H ¹, *Christabel Shaji . Y ² and Ajith Sinthuja .S ²

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ABSTRACT:

Metal-Organic Frameworks (MOFs) was established as a relatively new class of porous crystalline material with high surface area, structural diversity, and tailorability have exhibited a variety of applications in the field of catalysis, sensors, drug delivery, gas storage and separation etc. MOFs which were also known as porous coordination polymers have permanent porosity which enabled their inherent superiority for embedding the guest species particularly small metal nanoparticles for improved catalytic activity. MOFs were fabricated by linking inorganic metal ions or cluster with organic ligands or linkers. The metal ions form nodes that bind the arms of the linkers together to form a repeating, cage-like structure. Due to their unique features, MOFs have been fabricated as supports with various active species such as metal or metal oxide nanoparticles, carbon materials, polymers, graphenes, and so on, their applications have been implemented in the various fields. The tunability of MOFs sets them apart from other porous materials like zeolites and carbons. On comparing with MNP/MOFs composites, bimetallic NP/MOFs exhibited excellent catalytic performance due to the synergistic effect between the metals. This review describes the role of bimetallic nanoparticles embedded in Metal-Organic Frameworks and its catalytic performance.

Key words: Metal-Organic frameworks, Metallic nanoparticles

1. INTRODUCTION:

Metal organic frameworks are crystalline materials made of metal ions or clusters coupled to frequently stiff organic molecules to form one, two or three dimensional pore structures. MOFs possess large surface area, high porosity and chemical tunability and have been widely studied in gas storage and separation, sensing, catalysis, and so on. The large pore size and relatively small window size of the porous MOFs may facilitate the limitations of shape and diameter of metal NPs in the cavities and further prevent their aggregation. Hydrogen is a source of clean and environmental-friendly alternative energy addressing typical energy-related issues such as air pollution or global climate change. As a result, numerous efforts have been carried out to construct a “hydrogen

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ICIRC'23



Gibina Mol S	MS-07	Nesamony Memorial Christian College, Marthandam	Graphene oxide as filler for enhanced properties of EPDM nanocomposites	Isac Sobana Raj C, Ginil Mon S
	Day 2	10.00 - 11.00	Oral Presentation Session – 4 NM-1, 2, 3, 4, 5, 6, 7	
Hatin Betseba A H	NM-01	Holy Cross College (Autonomous), Nagercoil-4	A review on Metal-Organic Frameworks incorporated with metallic nanoparticles functioning as catalyst for hydrogen generation	Dr. Y. Christabel Shaji
R. Jeeffin Blessikha	NM-02	Nesamony Memorial Christian College, Marthandam	A Green Approach Of Parallel Account And Amalgamation Of Copper Nanoparticles	Dr. C. ISAC SOBANA RAJ & B.V. Deepthi
D. AASHIBA	NM-03	Nesamony Memorial Christian College, Marthandam	Synthesis Of Copper Nanoparticles Using Leaf Extract Of Sauropus Androgynus And Its Antimicrobial Properties	Dr.A.JEPA MALAR
A.JENI,	NM-04	Scott Christian College (Autonomous), Nagercoil	Characterization Of Green Synthesized Silver Nano-Particles Using Fenugreek Seed Extract And Its Antibacterial Activity	S.BEJILA DAVID
Florina Solomon	NM-05	Scott Christian College (Autonomous), Nagercoil	Economically feasible method of synthesis of silica nanoparticles from biowaste	A. Malar Retna
P. Bhuvaneswari	NM-06	Research Department of Chemistry, Sri Paramakalyani College, Manonmaniam Sundaranar University Alwarkurichi	Synthesis and Characterization of Chitosan with Silica (CS) Nanocomposite with Enhanced Antibacterial Activity	G Sabeena ² , G Annadurai ^{2*} , E. Sindhuja ¹

Nanomaterials& Nanotechnology

NM-01

**A Review on Metal-Organic Frameworks Incorporated with Metallic Nanoparticles
Functioning as Catalyst for Hydrogen Generation**

Hatin Betseba A H ¹, *Christabel Shaji Y ² and Ajith Sinthuja S ³

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Email Id: christabelshaji@holycrossngl.edu.in

Abstract:

Recently, the embedding of bimetallic nanoparticles inside the pores of Metal-Organic Frameworks have huddled great attentiveness in the field of catalysis, sensors, drug delivery etc. Porous coordination polymers also known as metal-organic frameworks (MOFs), are composed of metal ions or clusters coordinated with organic linkers or ligands. The metal ions form nodes that bind the arms of the linkers together to form a repeating, cage-like structure. Due to this hollow structure, MOFs have an extraordinarily large internal surface area and represented as a potential category of materials that have high porosity, varied composition, and tuneable pore structure. The tunability of MOFs sets them apart from other porous materials like zeolites and carbons. Due to these properties, there has been a lot of study interest in a number of areas, including gas adsorption and separation, catalysis, luminescence, sensing, biology etc. When compared to their monometallic counterparts, bimetallic MOFs with tuneable compositions and architectures have better characteristics and perform better in numerous applications due to the synergistic effect between the metals. This review describes the role of bimetallic nanoparticles embedded in Metal-Organic Frameworks as catalysis for hydrogen generation.

Key words: Metal-Organic frameworks, Metallic nanoparticles, Ammonia Borane, Hydrazine, Formic acid, hydrogen generation.

Introduction:

Porous materials like Metal-Organic Frameworks, coordination polymers, zeolites have received a lot of attention recently. MOFs were demonstrated as porous structures formed by assembling of organic linkers or ligands like carboxylates or anions like sulphonates, heterocyclic compounds, phosphates that are coordinatively bonded to metal ions. MOFs were created by coordinating metal containing units or secondary building units with organic linkers, resulting in frameworks with superior properties such as lasting porosity, vast surface area, sustainable framework, and pore volume. The amazing characteristic is their porosity, which allows guest molecules to penetrate into the crystalline

material [1,2]. MOFs have become a group of incredibly exciting composite functional materials. Despite their low cost and greater stability, older porous materials like activated carbons and zeolites still have issues with non-uniform structures, uneven pores, and a lack of obvious structure-property connections. The selectivity of the shape and size of guests to be embedded is determined by the shape and size of the cavity in the framework. Owing to their high permeability, MOFs was used for gas storage and separation, sensors, catalysis, drug delivery, and other applications [3,4]. Embedding MOFs with metal NPs were an intriguing and significant advancement in the field, yielding NP/MOFs composites with unrivalled properties and performance. Several metal NPs immobilised in MOFs with high



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I. Esther	GC-03	Department of Chemistry, Nesamony Memorial Christian College Marthandam	Comparative study of natural dyes extracted from achiote seeds and beet root in the studies of solar energy conversion and storage	A.Malar Retna, S.Ginil Mon
	Day 2	02.25 - 02.50 PM	Oral Presentation Session – 6	MC - 1, 2, 3, 6, 7
Santhiya. S	MC-01	Holy Cross College (Autonomous), Nagercoil. Government Polytechnic College, Nagercoil	Synthesis, Characterisation and Biological Evaluation of Novel Ruthenium(II)-polypyridine-5-(3-pyridyl)-4H-1,2,4-triazole-3-thiol Mixed Ligand Complexes	Arul Mary. S, Sheeba Daniel
A. Snow Havi Thev	MC-02	Holy Cross College (Autonomous), Nagercoil	Extraction of dna from kiwi fruit and its binding interaction with ruthenium(ii)-phenanthroline complexes	V. Punitha, S.C. Benittin Shalom, Sheeba Daniel
N. Sunitha	MC-03	Nesamony Memorial Christian College, Marthandam	Antidiabetic and antibacterial studies of metal complexes from heterocyclic derivatives	C. Isac Sobana Raj, B. Sindhu Kumari
J.Stephy John & R.Priya	MC-04	Department of Chemistry Nesamony Memorial Christian College, Marthandam	Recent advances in bio-medical applications of schiff base copper metal complexes – a review	Dr.P. Metilda
Blessy C	MC-05	Nesamony Memorial Christian college, Marthandam	Comparative studies on anticancer activities of bioactive schiff base complexes from dfmpm and n-propylamine	Dr. C. Isac Sobana Raj

Metal Complexes

MC-01

Synthesis, Characterisation and Biological Evaluation of Novel Ruthenium(II)-polypyridine-5-(3-pyridyl)-4H-1,2,4-triazole-3-thiol Mixed Ligand Complexes

Santhiya. S¹, Arul Mary. S² and Sheeba Daniel^{1*}¹Department of Chemistry, Holy Cross College (Autonomous), Nagercoil, Tamil Nadu, India.²Department of Basic Engineering, Government Polytechnic College, Nagercoil, Tamil Nadu, India.Email: sheebadaniel@holycrossngl.edu.in

Abstract

The novel mixed ligand complexes [Ru(bpy)₂(pytrzSH)₂](PF₆)₂ (complex A) and [Ru(phen)₂(pytrzSH)₂](PF₆)₂ (complex B) (bpy = 2,2'-bipyridine, phen = 1,10-phenanthroline and pytrzSH = 5-(3-pyridyl)-4H-1,2,4-triazole-3-thiol) has been synthesized and characterized by elemental analysis, UV, FTIR, ¹H NMR, ¹³C NMR and MALDI-TOF mass spectral techniques. The spectral data confirms the formation of octahedral complexes. The lipophilic nature of the complex is determined from the partition coefficient (*log P*) values and it is found to be 1.20 ± 0.004 for complex A and 1.86 ± 0.004 for complex B. The synthesised complexes show slight antimicrobial activities on *S. aureus*, *P. aeruginosa*, *E. coli*, *A. niger* and *C. albicans*. The α-glucosidase inhibitory activity of the synthesised complexes A and B against the positive control acarbose display IC₅₀ value at 490.32 and 223.01 µg/mL. *In vitro* antiproliferative and cytotoxic effects of complexes A and B are analysed on SK-MEL-28 and normal L6 cell lines by microscopic and MTT assay methods. The IC₅₀ for complexes A and B on SK-MEL-28 cancerous cell line are found to be 27.444 and 40.721 µg/mL and for normal L6 cells are 25.869 and 38.425 µg/mL respectively. The apoptotic study suggests that the synthesized complexes show late apoptotic effect on SK-MEL-28 cancerous cells and early apoptotic effect on normal living L6 cells. Hence the obtained results suggest that the biological activities of the synthesised complexes depend on the nature of the ligands present in the complexes.

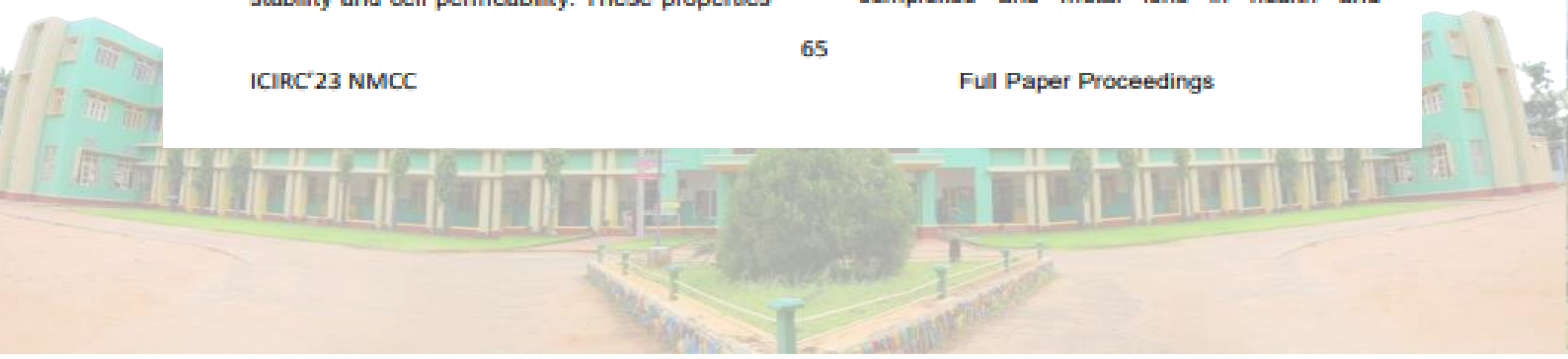
Keywords: Ru(II)-mixed ligand complexes; Antimicrobial activity; α-glucosidase inhibitory activity; SK-MEL-28 cell line; Normal L6 cell line; Apoptotic effect.

1. Introduction

The success of platinum-derived anticancer drugs has been stimulated by the progress of medicinal inorganic chemistry and research on metaldrug has proposed a recent growing number of anticancer agents [1,2]. The study of metal complexes bearing a bioactive drug is gaining more interest now than before because of the synergetic effect of drugs on coordination with a metal [3]. The transition metals have well-developed coordination chemistry where reliable metal cores, as well as co-ligands can be tailored to promote aqueous stability and cell permeability. These properties

of transition metals lead to the development and designing of metal-based drugs with promising pharmacological application and unique therapeutic opportunities. Therefore, the use of transition metal complexes as therapeutic compounds has become more and more pronounced [4-6].

The biological functions in human body mainly depends on the presence of metal ions, which are required to keep the human body healthy and their absence or scarcity may lead to diseases. Diverse biological activities of naturally occurring inorganic or organic metal complexes and metal ions in health and



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A. Snow Havi Thev	MC-02	Holy Cross College (Autonomous), Nagercoil	Extraction of dna from kiwi fruit and its binding interaction with ruthenium(ii)-phenanthroline complexes	V. Punitha, S.C. Benitlin Shalom Sheeba Daniel
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J.Stephy John & R.Priya	MC-04	Department of Chemistry Nesamony Memorial Christian College, Marthandam	Recent advances in bio-medical applications of schiff base copper metal complexes – a review	Dr.P. Metilda
Blessy C	MC-05	Nesamony Memorial Christian college, Marthandam	Comparative studies on anticancer activities of bioactive schiff base complexes from dfmpm and n-propylamine	Dr. C. Isac Sobana Raj

Metal Complexes

MC-02

Extraction of DNA From Kiwi Fruit and Its Binding Interaction With Ruthenium(II)-Phenanthroline Complexes

A. Snow Havi Thev, V. Punitha, S.C. Benitlin Shalom and Sheeba Daniel*

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Email: sheebadaniel@holycrossngl.edu.in

Abstract

Binding of $[\text{Ru}(\text{phen})_3]^{2+}$, $[\text{Ru}(\text{bphen})_3]^{2+}$ and $[\text{Ru}(\text{bps})_3]^{4+}$ (phen = 1,10-phenanthroline, bphen = bathophenanthroline and bps = bathophenanthroline disulfonate) complexes with the DNA isolated from kiwi fruit extract at various concentrations (5×10^{-5} - 3×10^{-4} M) in aqueous medium has been investigated by UV absorption spectral techniques. The complexes show both ligand-centred (LC) and metal to ligand charge transfer (MLCT) absorption peaks. The binding constant (K_b) of these complexes with the DNA isolated from the kiwi fruit is determined from Benesi-Hildebrand plots and it occurs in the range of 3.2×10^6 - $8.4 \times 10^7 \text{M}^{-1}$. The K_b value of $[\text{Ru}(\text{bps})_3]^{4+}$ complex is higher than that of $[\text{Ru}(\text{phen})_3]^{2+}$ and $[\text{Ru}(\text{bphen})_3]^{2+}$ complexes. This is due to the greater π - π interaction of the ligands of the $[\text{Ru}(\text{bps})_3]^{4+}$ complex with the base pair of the DNA. Binding studies of all three complexes on the DNA display hyperchromic and bathochromic shifts. This confirms that the complexes interact with the DNA through intercalative and electrostatic binding modes. The obtained results revealed that the DNA binds strongly with the ruthenium phenanthroline complexes in the MLCT and LC regions. The K_b values depend on the nature of the ligands present in the complexes. This study confirms the binding nature of $[\text{Ru}(\text{phen})_3]^{2+}$, $[\text{Ru}(\text{bphen})_3]^{2+}$ and $[\text{Ru}(\text{bps})_3]^{4+}$ complexes with the DNA isolated from kiwi extract.

Keywords: Ruthenium-phenanthroline complexes, kiwi extract, binding constant, intercalative interaction, electrostatic interaction.

1. Introduction

The human genome project has revolutionized health care by providing a way for physicians to look very closely at DNA and identify genetic factors that lead to disease [1]. DNA has received attention in the interaction of transition metal polypyridyl complexes as DNA secondary structural probes and photocleavage reagents. Ruthenium (II) complexes due to the strong DNA-binding and potential anticancer activity currently focus on DNA binding extensively as the material of inheritance and control for the structure and functions of the cells [2-3]. Ru (II)-polypyridyl complexes undergo binding with DNA, RNA and proteins and act as therapeutic agents [4].

Ruthenium co-ordinated with polypyridyl ligands such as 1,10-phenanthroline (phen), acts as a chelating agent for metal complexes that exhibit metal-to-ligand charge transfer (MLCT) and ligand-to-metal charge transfer (LMCT) transitions in the complex [5]. To understand the role of the Ru(II) complex with DNA, the present study focuses on the binding of $[\text{Ru}(\text{phen})_3]^{2+}$, $[\text{Ru}(\text{bphen})_3]^{2+}$ and $[\text{Ru}(\text{bps})_3]^{4+}$ complexes (bphen = with the DNA isolated from kiwi fruit extract. The binding of the complexes with the DNA isolated from kiwi fruit extract leads to a better binding property which plays a way in applicability in various medicinal and biological fields.



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C. T. Gracelin Retnam	MC-07	Nesamony Memorial Christian College, Marthandam	Synthesis, Characterisation And Biological Studies Of Metal Complexes From 2,4-Dihydroxy Benzaldehyde Derivative	S. Viola Rose , B. Sindhu Kumari
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C.P.Christin Raj	MS-03	Department of Mechanical Engineering, Noorul Islam University	Applications of Composite Materials in Rocket Nozzle	Dr. B. Bavanish
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K.J.Jasmine Jerlite	MS-05	Department of Chemistry, Nesamony Memorial Christian College Marthandam	A study on mechanical properties and cytotoxicity of biobased thin films	Dr.N.T. Nevaditha
Jisha Victor J.L	MS-06	Department of Chemistry, Nesamony Memorial Christian College Marthandam	Characteristics And Mechanical Properties of Ethylene Propylene Diene Terpolymer – Poly vinyl chloride Composite films	S. Gilin Mon

Metal Complexes

MC-06

Synthesis, Characterization and Antimicrobial Evaluation Of n, N'-Bis(2-Furylidene)-1,2-Phenylenediamine Ligand and Its Metal Complexes of Copper and Iron**V. Punitha, A. Snow Havi Thev and Sheeba Daniel**

Department of Chemistry, Holy Cross College, Nagercoil-629004, Tamil Nadu, India.

Affiliated to Manonmaniam Sundaranar University, Tirunelveli

Email: punithasadhu@gmail.com**Abstract**

The antimicrobial evaluation of Cu(II) and Fe(II) complexes of N,N'-bis(2-furylidene)-1,2-phenylenediamine is determined by Kirby-Bauer method. The synthesised ligand and its complexes are characterised by UV-Visible, FT-IR and NMR spectroscopy. The electronic spectra of synthesised Cu(II) and Fe(II) complexes exhibit absorption peak at 940 and 944 nm and this confirms the octahedral geometry of the complexes. Antimicrobial activity of the ligand and the synthesised complexes is tested against *Escherchia Coli*, *Staphylococcus Aureus*, *Candida Albicans* and *Candida Tropicalis*. The ligand and the synthesised complexes show good antimicrobial activity. The antimicrobial activities of the synthesised complexes are higher than that of the ligand, this indicates that the antimicrobial activity of the ligand decreases on complexation with Cu(II) and Fe(II) metals. The synthesised ligand and the complexes directly interact with the outer membrane of the microorganism, causes the membrane to rupture and kills the microorganism. Thus, the antimicrobial activities of the synthesised ligand and the complexes provide a promising path for future research in clinical diagnosis as therapeutic agents.

Keywords: Metal complexes, Synthesis, Characterization, Antimicrobial activity.**1. Introduction**

Schiff's bases constitute a class of pharmaceutical and medicinally important molecules. They are the important intermediates for the synthesis of bioactive products and various Schiff base metal complexes [1]. Schiff bases have been reported to show a variety of biological actions by virtue of the azomethine linkage, which is responsible for various antibacterial, antifungal, herbicidal and clinical activities [2-5]. Schiff bases have been associated with various significant catalytic and photochromic properties [6]. Schiff bases are condensation products of primary amines with carbonyl compounds and they were first reported by Hugo Schiff in 1864. The common structural feature of this compound is the azomethine group with a general formula

$RN=CH-R_1$, where R and R_1 are alkyl, aryl, cycloalkyl or heterocyclic groups which may be variously substituted. Schiff bases that contain aryl substituents are substantially more stable than alkyl substituents. Schiff bases of aliphatic aldehydes are relatively unstable and readily polymerizable, while those of aromatic aldehydes have effective conjugation and stability [7].

Copper is an essential trace element for all organisms. It is an important constituent of hemocyanin which supplies oxygen to certain aquatic creatures and redox enzymes. Copper containing enzymes play an important role in the pigmentation of skin functioning of brain and in iron metabolism in human body. The metal-ligand interaction in Cu(II) complexes is ionic and the stabilization of Cu(II) state through





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dielectric constant (ϵ'), dielectric loss ($\tan\delta$) and conductivity (σ_{ac} (ω)) were measured as a function of variable frequency ω (5 MHz to 10 Hz) with the variation of temperature. Significant reductions within the dielectric constant ϵ' have been examined with the increased in frequency and the enhancement in dielectric constant ϵ' with the increase in valuable temperature. Additionally, the ferroelectric and magnetic responses were recorded which are to be significantly influenced via Er^{3+} doping and saturation polarization (P_s) and saturation magnetization (M_s) values are found to be increased, respectively.

Keywords: Nanoparticles, Er substitution, Complex impedance, Ferroelectric, VSM.

Antimicrobial Evaluation of Silver Nanoparticles Synthesized from Vegetable Peel Extracts

Sheeba Daniel and R Gladis Latha

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Abstract

Vegetable peel extract mediated synthesis of nanoparticles is an eco-friendly and reliable method for the production of nanoparticles [1-3]. The objective of the present study is to synthesize silver nanoparticles (AgNPs) from the peel extracts of ash gourd, cucumber, pumpkin and snake gourd and analyse their antimicrobial activities. The aqueous vegetable peel extracts are added separately to 1 mM silver nitrate solution and the formation of corresponding AgNPs are primarily detected from UV-Visible spectroscopy. The brown colour of AgNPs formed by the reduction of Ag^+ ions in aqueous solution are due to the surface plasmon resonance phenomenon, which results from collective oscillations of their conduction band electrons in response to electromagnetic waves [4]. The synthesized AgNPs show the corresponding surface plasmon resonance peak in the range of 440-459 nm. The broadening of the surface plasmon peak in the synthesized AgNPs indicates that the particles are poly dispersed. The bioactive molecules present in the peel extracts responsible for the formation of AgNPs are detected by FT-IR spectroscopy. The nature and the particle size of the synthesized AgNPs are determined from XRD analysis. The antimicrobial activity of the four synthesized AgNPs shows good activity on *Staphylococcus aureus*, *Klebsiella pneumoniae*, *Escherichia coli*, *Pseudomonas aeruginosa*, *Aspergillus* and *Candida albicans*. The synthesized AgNPs directly interact with the outer membrane of the micro-organism, causes the membrane to rupture and thus kills the microorganism. Thus, the synthesized AgNPs may have a potential use in the biomedical applications.

Keywords: Vegetable peel extracts; green synthesis; silver nanoparticles; antimicrobial evaluation

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2. <http://dx.doi.org/10.3390/molecules25122812>

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DIVERSE ROLE OF ORGANISMS IN REMEDIATION

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Abstract

The tremendous advancements in the technology of industrial growth, strongly emphasize the population explosion, which paves way for the root cause of environmental deterioration. The sudden growth of industries has become the important cause of environmental pollution. Besides that, deterioration occurs with soil contamination, sediment contamination, water contamination and air contamination with release of hazardous and toxic chemicals. The industrial effluents possess persistent organic pollutants, which continually disturb the ecosystem, leading to climate changes, disturbing the ground water levels, ice cap melting and ozone depletion. Bioremediation is actually considered as an effective and environmental friendly technology for decontaminating the polluted systems with inexpensive cost. Thus, prompt cultivation of microorganisms is a potential biological tool for treating wastewater effluents, as it has the capacity to sequesters CO₂ during its adaptive growth.

Key words: Bioremediation, Environmental Pollution, Ecosystem, Industrial effluents.



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A REVIEW ON BACTERIAL MULTIDRUG RESISTANCE



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CHAPTER -I

Drug - Structural feature and pharmacology activity, prodrug concept. Absorption -first – pass effect. Distribution, metabolism- Phase I, II reactions, action of cytochrome p450 & elimination of drug receptor- localization, type and subtypes, models and their drug – receptor interaction, agonist & antagonist.


DRUG – STRUCTURAL FEATURE AND PHARMACOLOGY ACTIVITY:

Drug design and discovery involves identifying the structural parts of the drug molecule that are important to its biological activity. Structure-activity relationships (SAR) explore the relationship between a molecule's biological activity and the chemical (three dimensional) structure of the molecule. If the target structure is known, computational chemistry and molecular modeling software packages can be useful in identifying binding site interactions. Drug molecules typically contain several functional groups which can interact with certain groups in the biological target. The results of structure-activity relationship (SAR) studies can provide information on the intermolecular interactions that are actually established at the binding site. Armed with the knowledge of key binding site interactions and the pharmacophore (drug), the structural features of drug can be modified accordingly to give desired properties. One may synthesize modified versions of the drug in order to









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CHAPTER-I

AN OVERVIEW OF BIOTECHNOLOGY

Introduction, Early Biotechnology (Traditional) and New Biotechnology, History of Biotechnology, Basic Techniques of Biotechnology, Types of Biotechnology.

Introduction

Biotechnology is defined as "any technological application that uses biological systems, living organisms, or derivatives thereof to make or modify products or processes for a specific use" by the United Nations Convention on Biological Diversity.

A "specific use" usually refers to something that can be sold or that will help people. Studies in Biotechnology currently focus on artificial selection, cell culture, antibiotic manufacturing, and genetic engineering. Before the Hungarian engineer Karl Ereky invented the word "Biotechnology," however, people had already been harnessing bacteria to make useful things. Products of this early Biotechnology include the yeast used in the fermentation of cheese, wine, yogurt, and beer.



Figure 1.1: Some of the products derived from the use of prokaryotes in early Biotechnology include

RESEARCH METHODOLOGY

Volume - I

Dr. S. Kala Vetha Kumari, Dr. K. Lavanya,
Dr. V. Vidhya, Dr. G. Annlet,
Dr. J. M. Sasi Premila, Dr. Beena Lawrence



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Research Methodology

INTRODUCTION TO RESEARCH METHODOLOGY

Research is a way of looking for new information, new understanding and new facts. It is an activity that leads us to find new facts and assisting us in verifying the available knowledge and making us questioning things that are difficult to understand as per existing data. In common it refers to search for knowledge.

The word *Research* is originated from the French word "*recherchier*" meaning to search and search again. It is a careful and detailed study into a specific problem, concern, or issue using the scientific method. According to M Stephenson and D Slesinger research is defined as "the manipulation of things, concepts or symbols for the purpose of generalizing to extend, correct or verify knowledge, whether that knowledge aids in construction of theory or in the practice of an art." According to Clifford Woody research comprises defining and redefining problems, formulating hypothesis or suggested solutions; collecting, organizing and evaluating data; making deductions and reaching conclusions; and at last carefully testing the conclusions to determine whether they fit the formulating hypothesis.

The main aspects of research methodology is

1. To gain familiarity with a phenomenon or to achieve new insights into it (studies with this object in view are termed as

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GENETICS

An overview

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Text Book of Genetics

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Chapter-I Introduction

Introduction

Genetics is a branch of the biology involved with the study heredity, its biological process, the study of genes, genome, cell cycle, heredity, inherits genes and lot more

What is Genetics?

The exploration of the working and major codes of variation and heredity is termed as Genetics. The groundwork on which heredity stands is known as inheritance. It is defined as the procedure by which characteristics are handed down from one generation to the other. Gregor Johann Mendel is known as the "Father of Modern Genetics" for his discoveries on the basic principles of heredity.

Variation, as the name suggests is the amount of dissimilarity that exists in between children and their parentages. It can be determined to keep in view the behavioural, cytological, physiological, and morphological characters of individuals fitting into similar species.

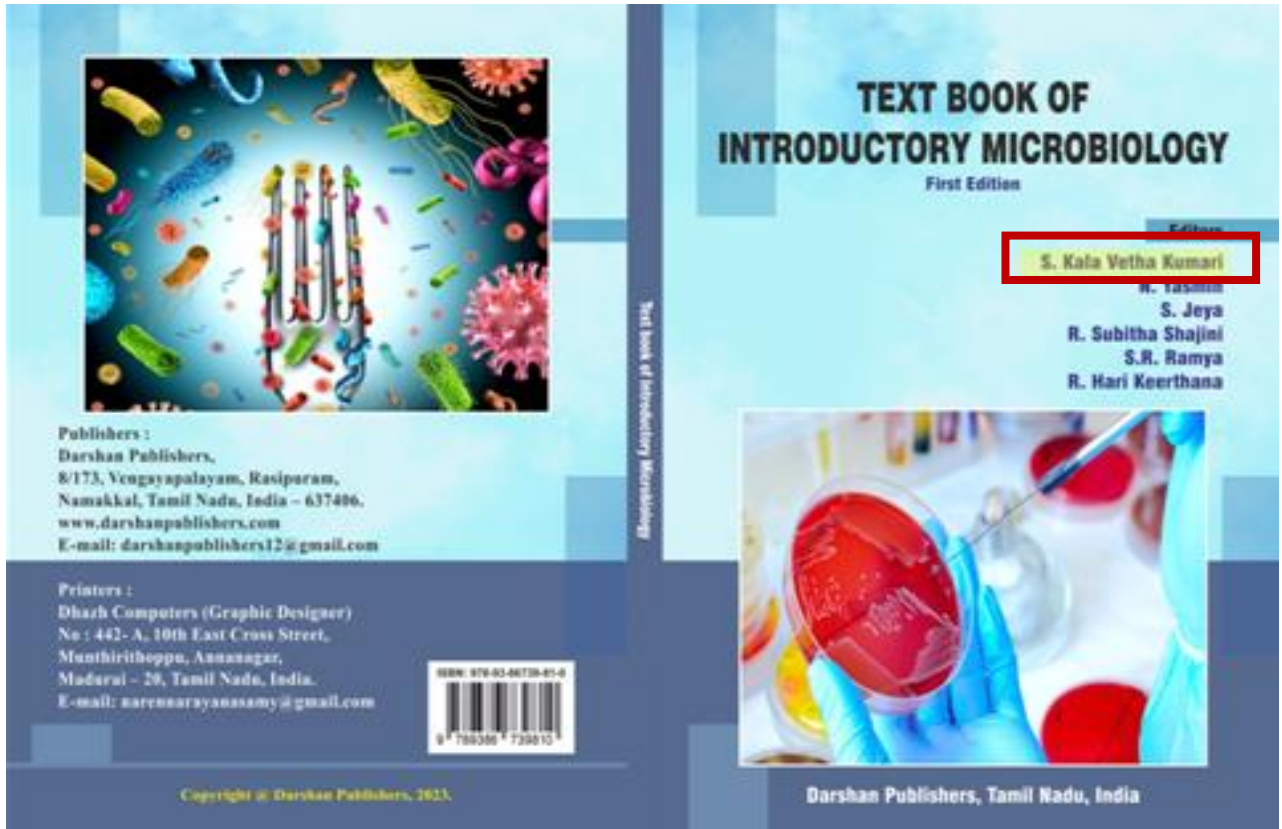
Some of the major reasons that variation are

- Genetic/Chromosomal rearrangement.
- Mutated genes due to the influence of the ecosystem.
- Crossing over.

Let us have a detailed look at genetics notes to learn about genes and the principle of inheritance.



Fig 1.1



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CHAPTER

08

NATURAL DYES
FOR
COLOURING FABRICS

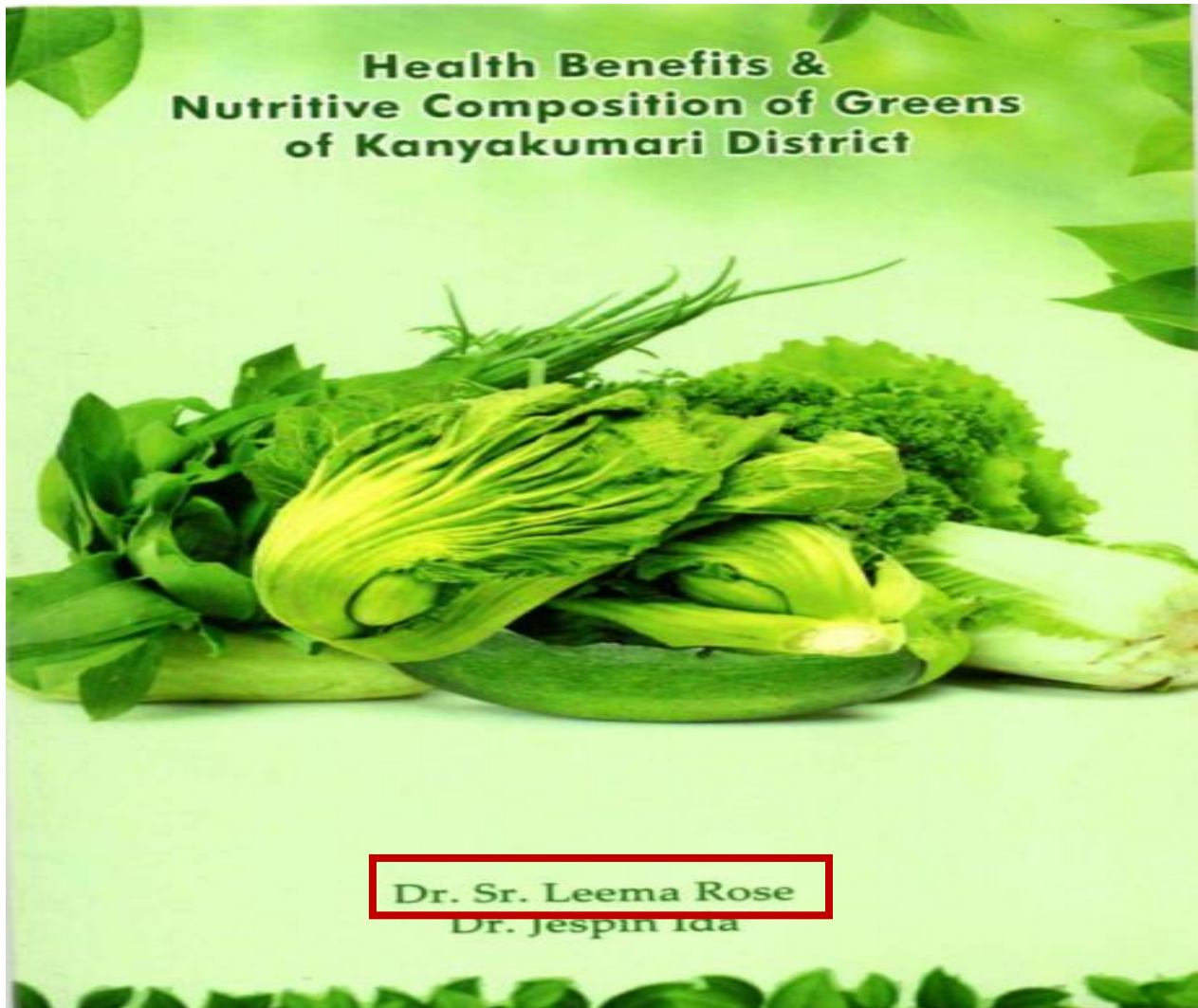
Dr. J. Celin Pappa Rani
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Abstract

Dyeing is art using dyes or pigments on textile materials such as fibers, yarns, and wool with the goal of achieving color with desired color fastness. Dyes are one of the most unique uses of the plants. In the present study of various ranges of dyes extracted from the flower of, Hibiscus rosa sinensis L., Impatiens balsamina L. rhizome of Curcuma longa L., leaves of Lawsonia inermis L., fruit of Rivina humilis L., which is used for coloring cotton and silk fabrics. Plant parts like rhizome, flower and leaves were used for extracting dyes. NaCl, vinegar and alum are the mordants used as fixatives of dyes. Fabrics like cotton and silk were used for dyeing. Fabrics were checked for rub, light and wash fastness. Cotton fabric shows good retaining capacity of natural dye when compared to silk fabric.

Keywords: Cotton, Dye, Extract, Fastness, Mordant, Silk.





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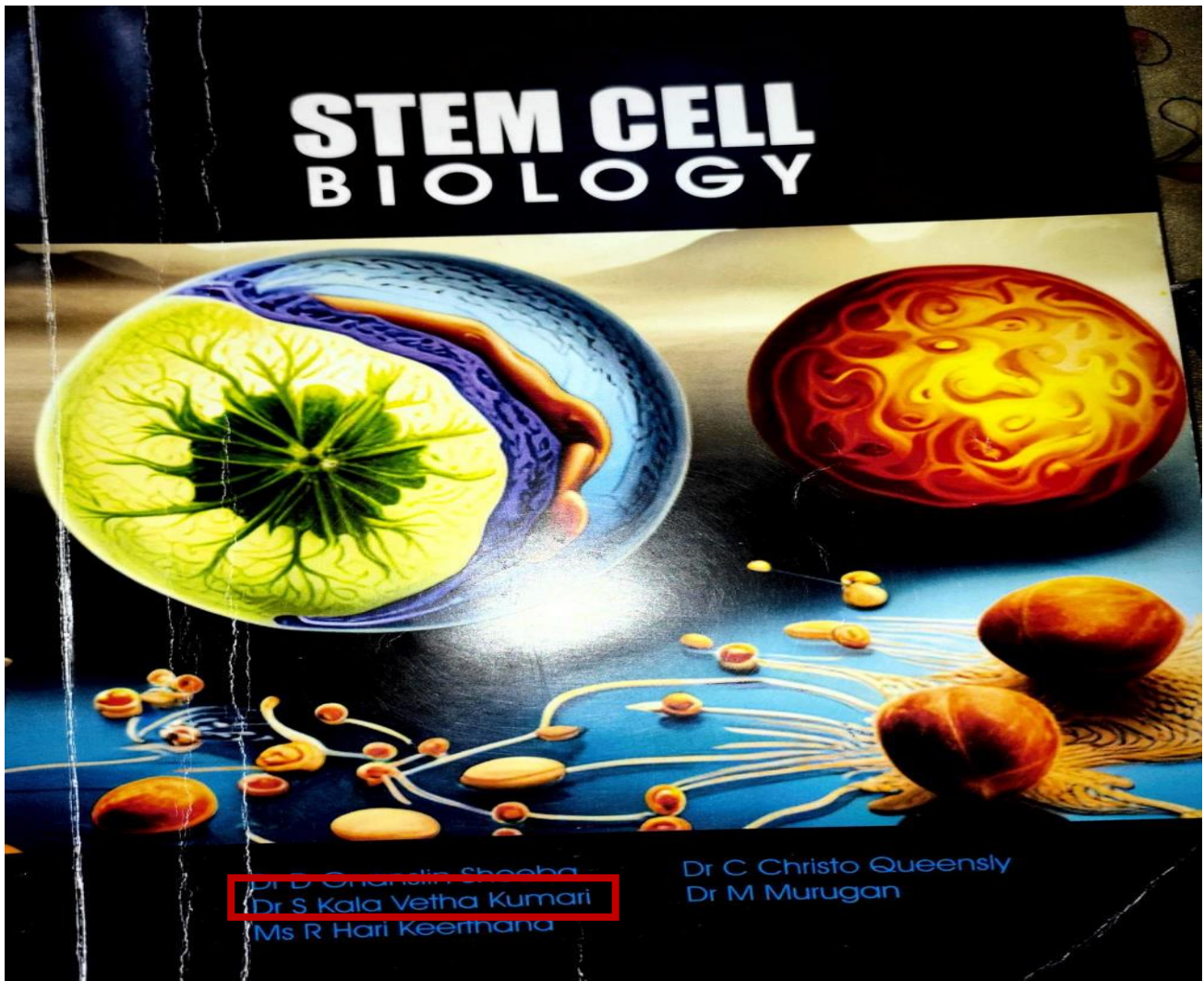
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INTRODUCTION

Nature abounds in a variety of green leaves; the researches show that this provides the ready answers to the ordinary ailments of life. Green leafy vegetables are used since ancient periods as source of food as they contain many nutrients and minerals which are helpful in maintaining human health. The health and nutrition of expanding world populations are major upcoming challenges especially in developing countries. Plant foods are sources of energy, micronutrients and nutrients essential to health, in addition to phytochemicals. Man has tremendous knowledge on edible plants since before civilization. Traditional vegetables are valuable sources of nutrition in rural areas.

Green leafy vegetables are the cheapest of all the vegetables within the reach of poor man, being richest in their nutritional value . The lack of knowledge especially on the nutritive value of these green leafy vegetables among the public in general is the main drawback in their lower consumption. India, having a variety of natural surroundings and varying climates and seasons, has a number of species of edible leafy vegetables.

Greens are appreciated because they not only supply the protective nutrients and add variety to a monotonous diet, but also have an alternative taste, pleasing appearance and aroma. Majority of the Indian population is vegetarian, and daily intake of at least 100 g of fresh green leafy vegetable is recommended by the nutrition experts . There are many plants including green leafy vegetables that have been implicated for several health benefits and nutritional values to mankind. Greens are the



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STEM CELL BIOLOGY

Unit 1:

Stem Cell Basics: Stem cells, embryonic stem cells, embryonic germ cells, bone marrow stem cells, adult stem cells, differentiation. Introduction to concepts in stem cell biology – renewal, potency *etc.* Stem cell characterizations: Isolation and characterization, markers and their identification, growth factor requirements and their maintenance in culture. Pluripotency and reprogramming.

Unit 2:

Hematopoietic Stem Cell, Induced Pluripotent Stem (iPS) cell technology, epigenetic memory in iPS cells, epigenetic controls of stem cells. Early embryonic development, Lymphoid cell differentiation and maturation, cell cycle regulators in stem cells. Molecular mechanisms of self-renewal, pluripotency and lineage differentiation. Molecular basis of pluripotency and stem cell niche.

Unit 3:

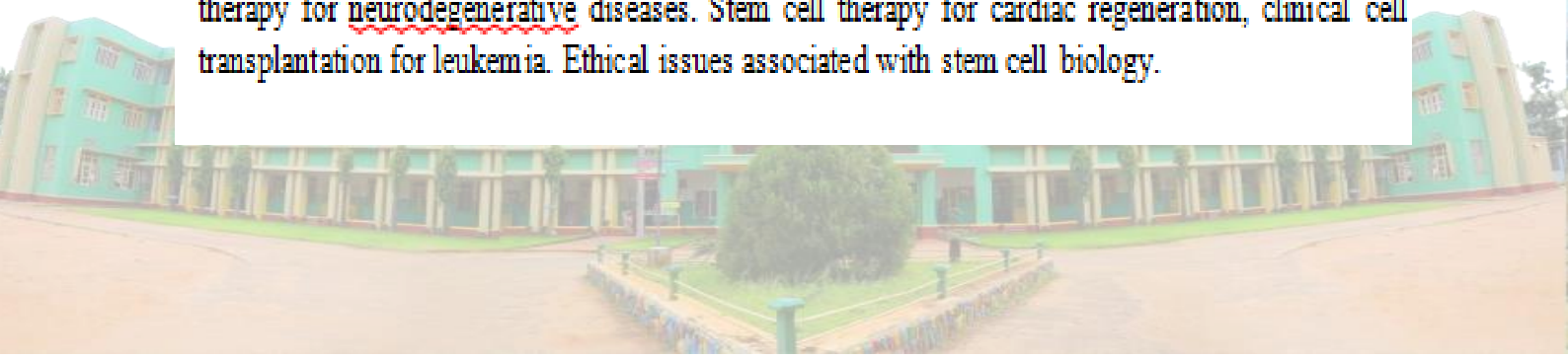
The human umbilical cord: A source of stem cells. Isolation of Mesenchymal Stem Cells (MSCs) from the umbilical cord, *in vitro* differentiation potential of umbilical cord mesenchymal stem cell. *In vivo* applications umbilical cord stem cells, cord blood stem cells transplantation – advantages and disadvantages, cord blood banking.

Unit 4:

Generation and manipulation of mouse embryonic stem cells. Generation and manipulation of human embryonic stem cells, animal models of regeneration – Hydra, Planaria, earth worm, zebra fish *etc.*

Unit 5:

Cancer stem cell – origin of cancer stem cells, impact of cancer stem cell, concept on cancer therapy. Epigenetics and reprogramming in stem cell biology. Stem cell gene therapy, stem cell therapy for neurodegenerative diseases. Stem cell therapy for cardiac regeneration, clinical cell transplantation for leukemia. Ethical issues associated with stem cell biology.



1.1 STEM CELL BASICS

1.1.1 Stem cells:

'Stem cells are special human cells that can develop into many different types of cells from muscle cells to brain cells.'

1.1.2 Introduction:

Stem cells also have the ability to repair the damaged cells. These cells have strong healing power. They can evolve into any types of cells.

Stem cells are undifferentiated cells of a multicellular organism which is capable of giving rise to more cells of the same type.

Researchers are going on and it is believed that stem cell therapies can cure ailments like paralysis and Alzheimer's as well.

1.1.3 Types of cells:

Stem cells are of the following different types

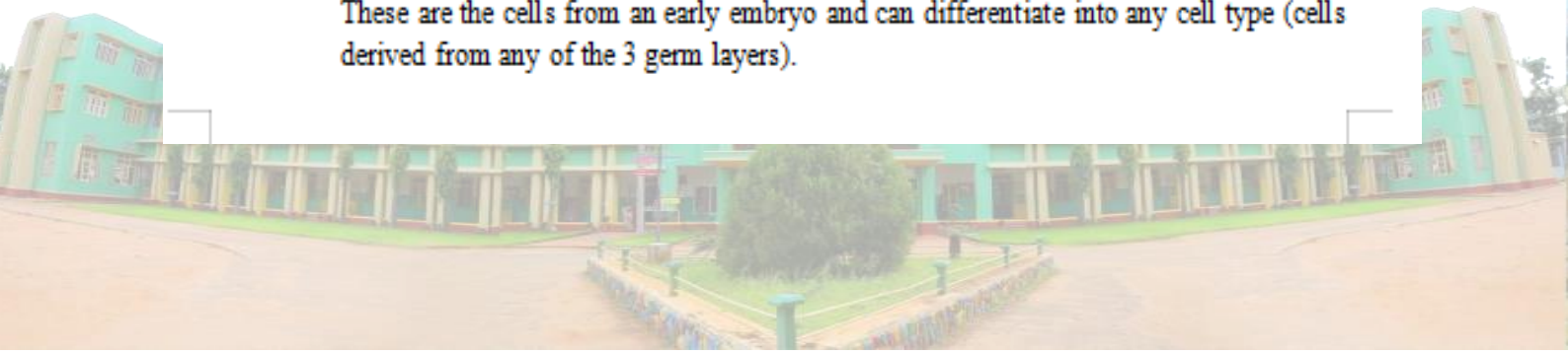
- ❖ Embryonic stem cells
- ❖ Adult stem cells
- ❖ Induced pluripotent stem cells
- ❖ Mesenchymal stem cells

1. Embryonic stem cells:

- From the very earliest stage of pregnancy after the sperm fertilizes the egg, an embryo form.
- Around 3-5 days after a sperm fertilizes an egg, the embryo takes the form of a blastocyst/ball of cells.
- The blastocyst contains stem cells, and will later implant in the womb.
- Embryonic stem cells come from a blastocyst that is 4-5 days old. Cells in one region group together to form the inner cell mass. This contains pluripotent cells that make up the developing foetus.

The embryonic stem cells can be further classified as

- Totipotent stem cells:
These cells can differentiate into all possible types of stem cells. The first few cells that appear as the zygote.
- Pluripotent stem cells:
These are the cells from an early embryo and can differentiate into any cell type (cells derived from any of the 3 germ layers).





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Phytochemical Screening of *Solanum Nigrum* L. Leaves Using Different Solvent Extracts

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¹ Research Scholar, ^{2,3} Assistant Professor Department of Botany and Research Centre, Holy Cross College (Autonomous), Nagercoil, Affiliated to MS University, Tirunelveli.

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Abstract

Solanum nigrum L. commonly known as Black nightshade is a medicinal hero of the Solanaceae family which is native to South East Asia and widely distributed in temperate to tropical regions of Europe. Traditionally, it is used to treat various diseases like pneumonia, acute nephritis, arthritis, leucorrhoea, eczema, caruncles, furuncles, stomach ache, ringworm, inflammation, fever, etc. It also act as hepatoprotective, diuretic and antipyretic. The aim of the present work is to correlate the various phytochemicals such as alkaloids, carbohydrates, Carboxylic acids, coumarins, flavonoids, glycosides, proteins, phytosterols, quinones, resins, saponins, steroids, tannins, terpenoids and essential oils using different solvent extracts such as aqueous, Petroleum ether, acetone and benzene. Among them, maximum number of phytochemicals were revealed in the benzene extract. The obtained results showed that *Solanum nigrum* L. have many phytochemical secondary metabolites of great pharmacological properties. Thorough screening of literature available on *Solanum nigrum* L. depicted the fact that it is a popular remedy among the various ethnic groups and the application of such natural drugs will play a key role in human as well as veterinary medicines in future.

Keywords: *Solanum nigrum* L., Phytochemical screening, Black Nightshade

Introduction:

Medicine from plant sources have been used in Homeopathy, Ayurvedic, Allopathy and in traditional medicine since time immemorial. Medicinal plants play a significant role among the traditional and modern systems. The people of rural area are mainly depending on the traditional medicine for curing their ailments because of the non availability of modern medicines and hospitals. In developing countries, 80 % of the population still use traditional folk medicines obtained from natural resources (Farnsworth, *et al.*, 1985). The curative properties of medicinal plants are mainly due to the presence of various complex chemical substances of different composition which occur as secondary metabolites (Karthikeyan, *et al.*, 2009). Knowledge of the chemical constituents of plant is desirable, not only for the discovery of therapeutic drugs but also because such information may be value disclosing new sources of such economic materials as tannins, oils, gums, precursors for the synthesis of complex chemical substances. In addition, the knowledge of the chemical constituents of plants would further be valuable in discovering the actual value of folklore remedies (Mojabet *et al.*, 2003).

The phytochemical research based on ethno pharmacological information is generally considered an effective approaches in the discovery of new anti-infective agents from higher plants (Duraipandiyar *et al.*, 2006). Plants contain may be bioactive chemical substances that produce definite physiological and biochemical actions in the human body. These bioactive constituents are alkaloids, tannin, flavonoids, phenolic compounds etc (Hill, 1952).



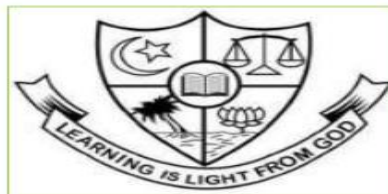
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**AN INTRODUCTORY SURVEY OF TREE SPECIES IN ARUMANALLOOR VILLAGE,
KANYAKUMARI DISTRICT, TAMIL NADU, INDIA**

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Abstract:

An investigation was carried out to survey the tree species present in Arumanalloor village, Kanyakumari District, Tamilnadu. A total of 57 tree species belonging to 27 families were reported. Of the 57 trees, Moraceae family was noted as the dominant family with 6 species. Annonaceae, Arecaceae, and Myrtaceae families contain 4 species. The Caesalpiniaceae, Euphorbiaceae, Fabaceae, Meliaceae, and Rutaceae families each contain 3 species. It was found that the majority of trees in the study were edible. Few of the trees were edible and they are used as timber and fuelwood. There are a few trees that possess medicinal properties. As far as its parts are concerned, the fruits of the tree are the most commonly used, followed by medicine, timber, fuel wood, as well as other products. Various biota also benefits from the shelter provided by these trees. Overall, the trees provide good green cover, control pollution, and prevent soil erosion, as well as habitat for a variety of living organisms.

Keywords: Trees, Arumanalloor, Edible, Medicinal, Timber





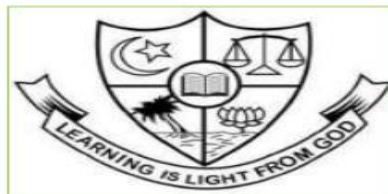
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The Impact of Natural Disasters on Environment*

**FLORISTIC DIVERSITY STUDIES ON NELLIKULAM WETLAND OF
VILAVANCODE TALUK IN KANYAKUMARI DISTRICT, TAMIL NADU, INDIA**

Catherine Sheeja V^{1} and Anami Augustus Arul A²*

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Tamilnadu, India,

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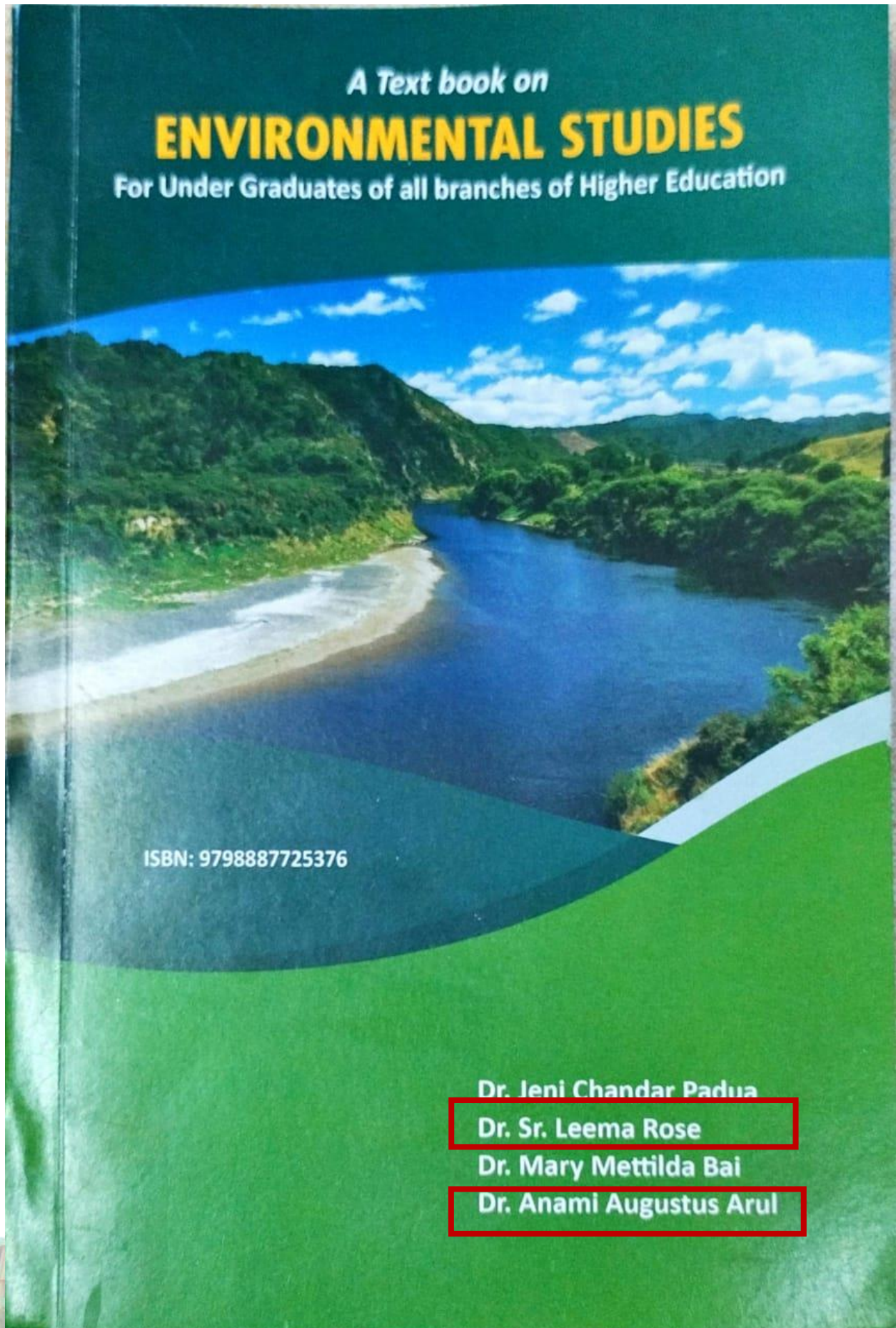
Affiliated to Manonmaniam Sundaranar University, Abhisekapatti, Tirunelveli, Tamilnadu, India

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Abstract:

Ecosystems of wetlands play an important role in the relationships between aquatic plants and animals that love moisture. For the understanding of biological diversity, floristic studies of wetlands are essential. This study focuses on the flora of the Nellikulam wetland located in the Kanyakumari district of Tamil Nadu. Periodic field visit was carried out during 2021-2022 in the wetland. A total of 90 plant species belonging to 40 families and 82 genera were collected and documented from Nellikulam wetland. Families with maximum number of species include Poaceae with 14 species followed by Asteraceae (10 species) and Acanthaceae (6 species). Habit wise showed herbs were dominant having (61 species) followed by shrubs (10 species) and climbers (3 species) have been documented. 23 families were Angiosperms, 2 families were Monocots and a Pteridophyte belongs to the family Davalliaceae is also reported. The majority of the space is occupied by herbs followed by shrubs and ferns. This study provides baseline information on the floral diversity of wetland plants that will be useful for managing and controlling plant species. A better understanding of factors like threats and conservation of wetlands is necessary for the proper balance of ecosystems.

Keywords: Wetland diversity, Nellikulam, Kanyakumari District



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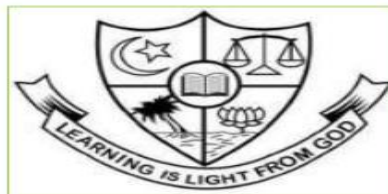
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**PRELIMINARY PHYTOCHEMICAL SCREENING OF *SOLANUM
TRILOBATUM* L. LEAF EXTRACTS**

A.R. Florence¹, Bojasa A. Rosy

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Nagercoil, Kanyakumari District- 629 004, Tamilnadu, India

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Abstract:

Background: Medicinal plants have been considered as healthy source of life and used in the treatment of various diseases as they possess potential pharmacological activities. The phytochemical analysis is very much important to evaluate the possible medicinal utilities of a plant and also to determine the phytochemicals in the sample which is responsible for the biological activities exhibited by the plants. *Solanum trilobatum* L. is an important medicinal plant and commonly known as "Climbing brinjal" and called thoothuvalai in Tamil belonging to family Solanaceae. It is used traditionally for curing various diseases such as asthma, cough, tuberculosis etc.

Objective: This study was carried out to analyse the phytochemical constituents of the plant *Solanum trilobatum* L. leaf extracts.

Method: Aqueous, petroleum ether, ethanol and benzene extracts of the leaves were prepared by adding 100 g of leaf powder to 1000 ml of these solvents and subjected to Soxhlet extraction. The extracts were concentrated by using vacuum evaporator and dried at 60°C. Preliminary phytochemical screening was performed by Harborne method.

Result: Different leaf extracts of *Solanum trilobatum* L. showed the bioactive constituents such as carbohydrates, saponins, phytosterols and tannins, whereas the stem portion possess carbohydrates, saponins, phytosterols, tannins, flavonoids and cardiac glycosides. The presence or absence of the phytoconstituents depends upon the solvent medium used for extraction and the physiological property of leaves.

Conclusion: The finding of the study revealed that the leaf extracts of *Solanum trilobatum* L. have a potential source of useful drugs due to the presence of various phytochemicals and can be utilized in the treatment of many diseases and also be exploited for use in the pharmaceutical and traditional systems of medicine.

Key words: Medicinal plants, phytochemicals, traditional medicine

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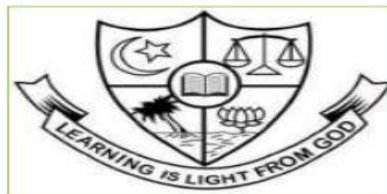
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PREPARATION OF CHEMICAL-FREE HERBAL COSMETICS

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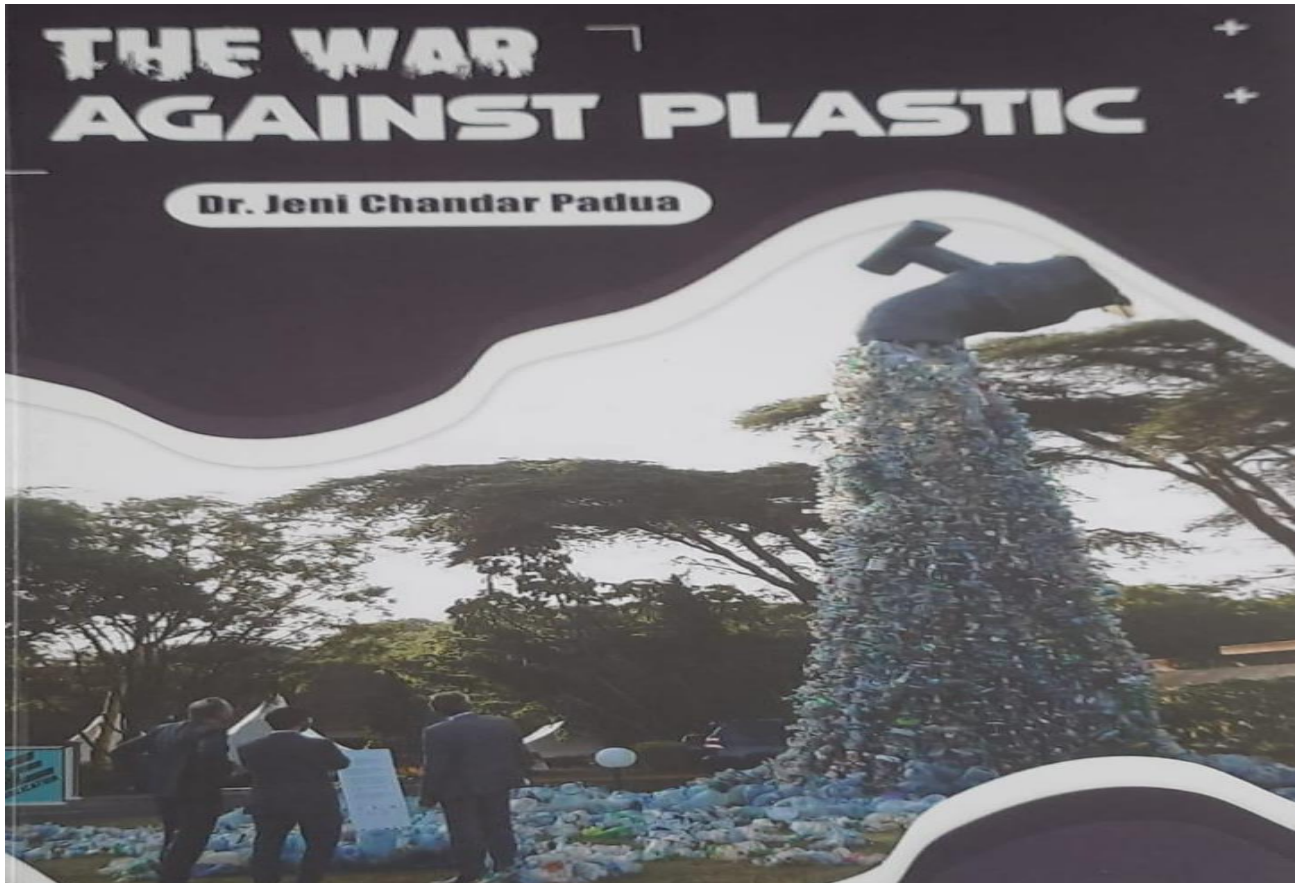
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Abstract:

Herbal cosmetics are becoming more and more popular. Natural beauty products promote a philosophy that links environmental protection with health promotion. It has been in use for a long time. Plant materials are gathered from their natural habitats and from certain nearby herbal shops to make a variety of herbal cosmetics. The dried plant parts of some of the collected plants are used, and extracts are obtained from some plants after drying, some plant parts from the collected plants are used, and extracts are extracted from other plants. Herbal formulations such as hair oil, tooth powder, creams, and shampoo powder were prepared for this study. The literature survey shows that herbal cosmetics are safe for use on human skin. In this study, several medicinal plants including *Coleus aromaticus*, *Azadirachta indica*, *Mentha piperita* L., *Aloe vera*, *Ocimum sanctum*, *Hibiscus rosa-sinensis*, *Sapindus mukorossi*, and *Eclipta prostrata* were successfully used to make diverse herbal cosmetics.

Keywords: Herbal cosmetics, medicinal plants, safe.





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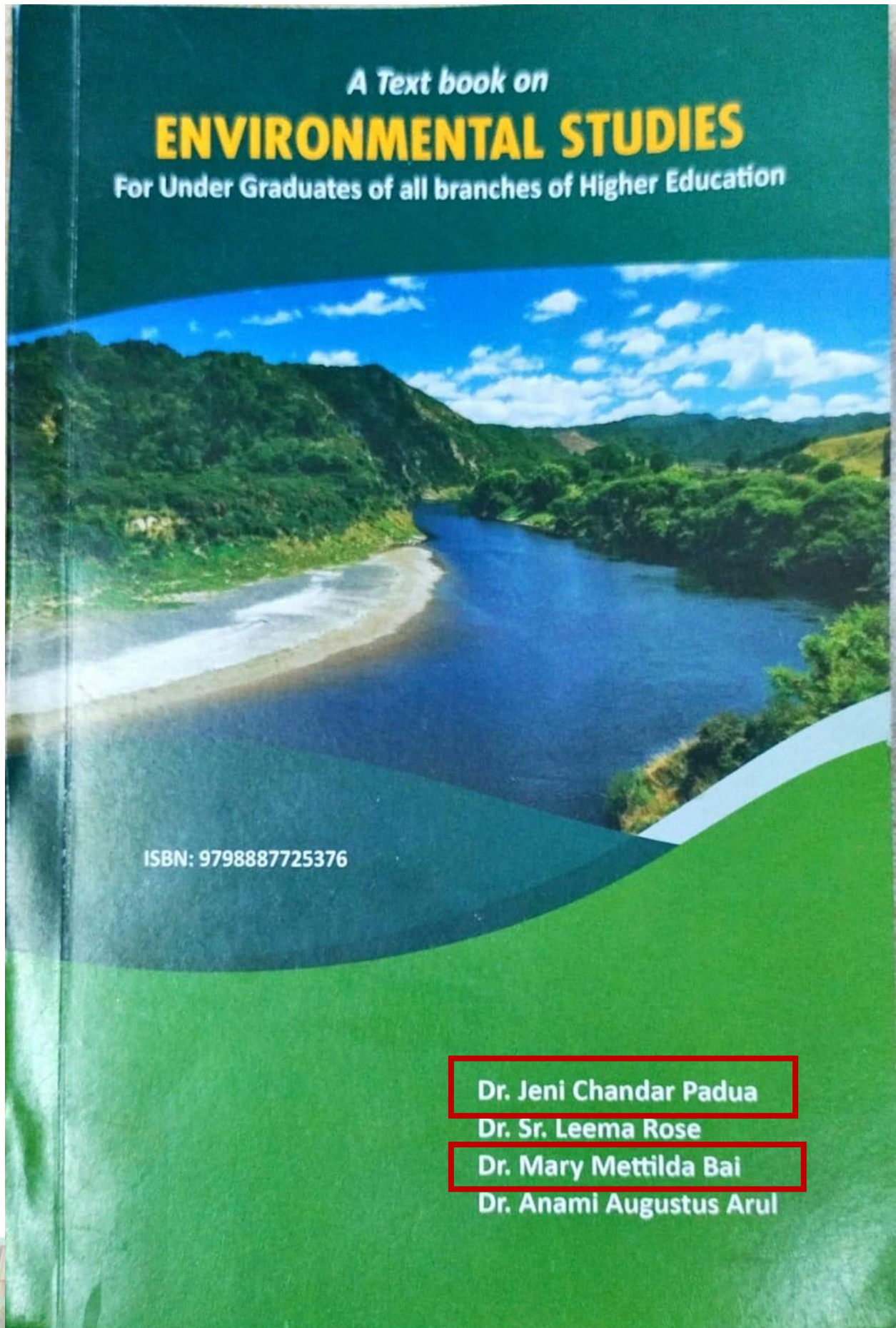
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Vitellogenin in Fishes- Diversification, Biological Properties, and Future Perspectives


Vaseeharan Baskaralingam
Rapeepun Vanichviriyakit
Editors

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Diversification and Classification of Vitellogenin in Fishes

[Mary Mettilda Bai Silvester](#), [Arokya Glory Pushpa Thiraviam](#), [Josephine Priyatharshini Chellappa](#) & [Basil Rose Michael Rajam](#)

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Abstract

Vitellogenin (Vtg) is a protein synthesized by the liver in response to estrogen expressed in the female bloodstream during vitellogenesis. It is a high-molecular-mass complex protein consisting of sugar, lipid, and phosphorus with other binding elements such as calcium, iron, and zinc. It is the precursor of the lipoproteins and phosphoproteins that makes up most of the protein content of yolk. Vitellogenin transports proteins and some lipids from the liver through the blood to the growing oocytes and functions as the incredible provider and part of the yolk, the vital nutrient to the developing embryos of egg layers (oviparous), both vertebrates and invertebrates. In the oocyte, Vtgs are processed into yolk proteins, stored mostly as yolk granules also termed as globules or platelets and sometimes in an amorphous compartment (fluid yolk). Recent protein and gene analyses have revealed the presence of several vitellogenin variants. Fish Vtgs exhibit complex evolutionary history expressing significant disparity in structure and function. This chapter deals with the diversification and classification of piscine vitellogenin.

Keywords

[Vitellogenin](#)

[Egg yolk protein](#)

[Lipoglycophosphoprotein](#)

[Lipovitellin](#)

[Phosvitin](#)

[Piscine vitellogenin](#)



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Functional Aspects of Vitellogenin in Oogenesis and Its Regulatory Mechanism

[Brisca Renuga Ferdinand](#), [X. Venci Candida](#), [Arunthathi Shyla Suganthi](#) & [Jeni Chandar Padua](#)

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Abstract

Before the embryo can fend for itself, vitellogenin (Vtg), a key precursor of the yolk proteins, provides the nutrition it needs to survive. The liver produces vitellogenin, the primary precursor of the protein in the yolk, which is then transported to and sequestered inside the eggs. Vitellogenin is crucial for the oocytes' healthy growth and development. Numerous factors such as the kind of egg (pelagic or benthic), the mode of reproduction (placental or nonplacental), and the cleavage pattern (meroblastic or holoblastic) are all impacted by the presence or absence of vitellogenin (Vtg). Eggs and embryos get free amino acids from Vtgs and Yps. The role of Vtgs in the transportation of calcium, phosphorus, lipids, amino acids, and other nutrients to the egg is often associated with its physiological significance. The differential expression of vtg genes typically dictates the kind of spawned eggs. Majority of Vtg genes are expressed in response to the season and reproductive cycle, and their byproducts are released into the bloodstream from the liver. In fish, the nervous and endocrine system coordinate reproduction. The sensory receptors process environmental inputs and the neural signals from these neural signals affect the pituitary gland by chemical messengers called releasing hormones. Gonadotropin-releasing hormones (GnRH) are released by the neurosecretory centers of the hypothalamus stimulate the pituitary to release the gonadotropins, which in turn target the gonads to secrete the sex steroids. A hormone of the hypothalamus, anterior pituitary, and gonads is referred to as the hypothalamo-hypophyseal-gonadal axis. The hypothalamus' neurons directly innervate the pars distalis and the pars intermedia of the pituitary adenohypophysis in teleost, which lack a hypothalamo-hypophyseal portal system. GnRH1 is considered crucial for the release of gonadotropins from

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Role of Vitellogenin as Immunocompetent Molecule

Savitriyadrimy Prakash Shoba, Johnson Vinolya Josephine Mary, Chellathangam Anitha & Amirtha Mari Punitha

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Abstract

Vitellogenin a glycolipoprotein present in the yolk of eggs is found circulating in the blood of vertebrates and plays a critical role in defense against microbes. Diverse vitellogenin molecules have been identified of which the cleaved product of Vtg—phosvitin and lipovitellin—displays antimicrobial activity functioning as an immune-relevant molecule. Though vitellogenin is primarily involved in yolk protein formation, it has been proved to be an efficient immunocompetent molecule and also possess antioxidant properties. Fishes which live in an aquatic environment are susceptible to different pathogens in its vicinity and can cause mass mortality of young ones. A highly immunocompetent female fish transfers the immune factors to its offspring, and high level of IgM has been observed in the larval forms. This circulating antibody incorporates into the vitellogenic oocytes, thus getting transferred to the larva via the yolk sac. The maternal antibodies are metabolized during the different larval stages and totally disappears in the later developmental stage. Vtg functions as a pattern recognition molecule by its capability to recognize pattern associated molecular patterns like lipopolysaccharide, lipoteichoic acid, peptidoglycans, and glucans found on the cell surface of microbes. Research on fish embryos has documented the role of Vtg in the immunity of various species like carp, zebra fish, and rosy barb and its function as a bactericidal molecule. The role of Vtg as an opsonin and its ability to phagocytose bacteria by macrophages, its antiviral and antioxidant property, has been elaborated through various studies on fishes.

Keywords

Glycolipoprotein

Phosvitin

Lipovitellin

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**Partial Characterization of Agglutinin Identified from the Hemolymph of the
Marine Crab *Tumidodromiadromia***

Benikca Prakash, J. Vinoliya Josephine Mary* S. Mary Mettilda Bai and J. Jovila

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Abstract

The physicochemical characterization of the agglutinin of the hemolymph of the crab *Tumidodromiadromia* was assessed, as it would help in the purification of a lectin. The hemolymph agglutinin was sensitive to pH and temperature suggesting its proteinaceous nature. The optimum pH was found to be from 7.5 to 8 and that of temperatures from 20°C. When assayed for cation dependency, it was found that the hemolymph was dependent on manganese, magnesium and calcium. Treatment with the calcium chelator tetrasodium EDTA showed a reduction in HA at 10 mM concentration. Hemagglutination inhibition experiments using glycoproteins and sugars assist in identifying the lectin's competitive binding. Glycoprotein thyroglobulin and BSM was identified as the potent inhibitor and sugars failed to inhibit the agglutinin. Therefore, the preliminary analysis of agglutinin sets the path for the isolation and analysis of the particular lectin and its application in diagnostics and targeted therapy against microorganisms and malignant cells.

Keywords: *Tumidodromiadromia*, erythrocytes, calcium dependant, glycoproteins, sugars.

Introduction

To eradicate infections, invertebrates have a powerful and efficient immune system that relies on physiological barriers, cellular defences, and humoral responses. They lack adaptive immune responses and rely only on their innate immune system. This innate immunity relies heavily on germline-encoded molecules to recognise and eliminate infections. Invertebrates' innate immune response relies heavily on lectins, -1,3-glucan binding proteins, peptidoglycan recognition proteins, to recognise non-self-entities (PaulchamyRamaraj et al, 2022). Several lectins or agglutinins have been identified as valuable tools in fractionating and assessing oligosaccharides and glycopeptides because they specifically bind to N-linked oligosaccharide folds (Ravindranath et al, 1985). Agglutinins extracted from animal tissues were studied as anti-apoptotic, immunomodulatory, antiviral, and anticancer therapeutic targets. Among the various classes of lectins isolated from invertebrates, sialic acid-specific lectins have gained prominence due to their function, which includes apoptosis induction, negative regulation of B cell signalling, cytokine secretion induction, and inhibition of bacterial and viral sialidases by altering the immunopotency of sialoconjugates expressed on the microbial surface (Elayabharathi et al, 2020). The form of sialic acid and glycosidic interaction with the adjacent sugar in an oligosaccharide contribute to a remarkable diversity of sialyl epitopes in pathogenic bacteria and human cancer sialoconjugates (Mercy and Ravindranath, 1993).

Lectins have been identified in the immune system of marine crustaceans, such as lobster, crabs, and shrimps which defend themselves from an invasion of bacterial, fungal and viral pathogens (Philip et al, 2013). C- type lectin has been identified from *Portunus trituberculatus* (Kong et al., 2008, Lu et al, 2017), *Eriocheir sinensis* (Jin et al, 2013), *Travancorianacharu* (Sheeja and Basil



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**Effect of pH, temperature and divalent cations on the hemagglutinating activity of
Hemolymph of the crab *Oziotelphusa cf. naga***

Jovila J, Mary Mettilda Bai S, Vinoliya Josephine Mary J, Benicka Prakash and Rathika RK

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Abstract

The hemolymph of the freshwater crab *Oziotelphusa cf. naga* revealed a naturally generated hemagglutinin with a remarkable affinity for rat erythrocytes. The hemagglutinin showed varying HA activity when incubated in buffer at acidic and alkaline pH, indicating that it was sensitive to both mildly acidic and extremely alkaline pH. The hemolymph was heat stable up to 40°C, and it lost activity at 80°C. Higher specificity for divalent Ca²⁺ was shown by the hemagglutinin. Disodium chelators additionally showed a higher level of inhibition. The results of this study describe the characteristics of the hemolymph hemagglutinin of the experimental crab.

Keywords

Erythrocyte, Hemagglutinin, hemolymph, *Oziotelphusa cf. naga*.

Introduction

The initial line of inducible host protection against bacterial, fungal, and viral invaders is the innate immune system (Hoebe 2004). Since the invertebrates lack adaptive immune systems, the species have evolved different biological host defence mechanisms, known as innate immunity, that react to common antigens on prospective invaders' cell surfaces. The innate immune system, which is activated when pathogen-associated molecular patterns are recognised by soluble or by cell surface host proteins, is entirely responsible for the defence systems of crustaceans. In Arthropoda, including insects, the horseshoe crab, freshwater crayfish, and the protochordata ascidian, the molecular structures and activities of numerous defensive components that engaged in innate immune systems have been identified during the past 20 years. These defensive molecules are found mostly in hemolymph plasma and hemocytes, and they include phenoloxidases, coagulation factors, complement factors, lectins, protease inhibitors, antimicrobial peptides, and toll receptors.

The innate immune system, which is made up of several parts, protects invertebrates from invasive bacterial, fungal, and viral diseases. Agglutinins are the compound involved in innate immunity and also considered as potential biomolecules for therapeutic agents. Hemagglutinins, that are carbohydrate-binding proteins, have recently been reported to play important roles in biological processes, including the recognition and control of non-self materials. Its specificity is always determined by the type of carbohydrate to which they bind.

A naturally occurring hemagglutinin was detected in the serum of the crabs *Paratelphusa jacquemontii* (Denis et al. 2003), *Charybdis feriatus* (Congjie et al. 2006), *Scylla serrata* (Jayaraj et al. 2010), *Travancoriana charu* (Sheeja and Basil Rose, 2016), *Lamella lamellifrons* (Mary Mettilda Bai and Basil Rose 2020), and *Grapsus albolineatus* (Rathika et al. 2022).



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Department of Zoology, Holy Cross College (Autonomous), Nagercoil – 629004, Tamil Nadu, India

**EFFECT OF SPIRULINA BIOFERTILIZER SUSPENSION ON
THE GROWTH OF *ABELMOSCHUS ESCULENTUS* (L.)**

Mary Bramisha, Catherine Agnes, Pavithra, S., Rathesha, S., **A.Shyla Suganthi***

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ABSTRACT: This study explores the effects of spirulina extract on the germination and growth of *Abelmoschus esculentus* (okra) over a ten-day period. Initial germination was observed on the second day, with the 1:1 spirulina extract concentration (Pot B) demonstrating swifter germination in both coastal and inland conditions compared to the 1:2 ratio (Pot C) and control (Pot A). Notably, offshore growth displayed a higher germination rate than onshore. The 5th-day results revealed that Pot B exhibited the most rapid shoot, root, and leaf growth in coastal conditions, followed by Pot C and Pot A. This trend persisted onshore, with Pot B excelling and offshore growth showing remarkable progress. By the 10th day, substantial growth disparities were evident, especially in onshore Pot B and C seedlings surpassing Pot A, while offshore seedlings displayed exceptional growth. Statistical analyses affirmed the significance of spirulina extract in promoting growth, particularly in offshore shoot development. These findings emphasize spirulina's potential to enhance agricultural practices and sustainable food production.

Key words: Biofertilizers, Spirulina, plant growth, *Abelmoschus esculentus*

INTRODUCTION

Cyanobacteria have emerged as crucial contributors to sustainable agriculture, playing a pivotal role in enhancing soil fertility, crop growth, yield, and environmental quality (Singh et al. 2011; Osman et al. 2016; Burjus et al. 2020). Among these, Spirulina, a consumable blue-green microalga (cyanobacterium), stands out for its exceptional nutritional content and health-promoting properties. Packed with high-quality protein, vitamins, essential fatty acids, and antioxidant pigments like carotenoids, chlorophyll, and phycocyanin, Spirulina is not only beneficial for human health but also offers promise for agricultural applications (Dillon, 1995). Blue-green algae, known for their autotrophic nature, prove valuable as soil conditioners, adept at converting inorganic matter into essential nutrients and fixing atmospheric nitrogen. Spirulina's unique spiral-shaped, multicellular structure sets it apart within the Oscillatoriaceae family, with cylindrical cells forming unbranched helicoid trichomes that glide and elongate via intercalary cell divisions. Its adaptability spans various



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EXPLORING THE PHYLOGENETIC RELATIONSHIPS OF PANULIRUS POLYPHAGUS THROUGH 16S rRNA ANALYSIS (CRUSTACEA: MALACOSTRACA: PALINURIDAE)

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ABSTRACT

We assessed the taxonomic position of *Panulirus* spiny lobsters collected from Kadiyapatnam and Kanniyakumari landing centers, Tamil Nadu, India. Here, we employed Maximum Parsimony, Neighborhood Joining, and Maximum Likelihood methods to generate a phylogram based on the mitochondrial 16S rRNA gene. Comparative analysis using BLAST indicated a high degree of similarity (99.47%) between the 16S rRNA of *Panulirus* sp. and *P. polyphagus*. Our phylogenetic analysis, employing these approaches, consistently demonstrated a shared pattern that elucidates the relationship between *Panulirus* and *P. polyphagus* (Cochin) as well as *P. Homarus*. The lowest pairwise distance for "*P. polyphagus*" is with the species "*S. nodifer*" with 0.678. This suggests that "*S. nodifer*" is genetically the closest to "*P. polyphagus*" among the species listed in terms of their 16S rRNA sequences.

Keywords: Phylogeny; spiny lobster; *Panulirus polyphagus*; Molecular taxonomy; 16S rRNA, Decapoda, Crustacea.

Introduction

Spiny lobsters, belonging to the Palinuridae family, are decapod crustaceans of significant commercial value (Radhakrishnan and Manisseri 2003; Palero *et al.*, 2011). The intriguing biology and phylogenetic status of these organisms have not only piqued academic interest but have also attracted attention for aquacultural and fisheries management considerations. Thus, precise species identification holds paramount importance, particularly for optimizing culture techniques related to this economically vital shellfish category. In the realm of accurate species identification, molecular markers, in addition to traditional methods, have proven to be potent tools capable of detecting even subtle genetic variations within populations (Utter, 1991).

Mitochondrial DNA (mtDNA) stands out as a prominent molecular marker extensively harnessed in the identification of marine invertebrates (Kelly and Palumbi, 2010; Tyni *et al.*, 2018). Its utility extends to determining the taxonomic status of distinct populations, thereby furnishing indispensable insights for forthcoming management and conservation endeavors (Moritz, 1994). In the context of crustaceans, mitochondrial 16S rRNA gene sequences have gained prominence in molecular phylogenetic inquiries. Consequently, this study aims to present the outcomes of our investigation into the phylogenetic positioning of the spiny lobster genus *Panulirus*. This exploration hinges on the analysis of nucleotide sequences within the mitochondrial 16S rRNA gene, utilizing three distinct methodologies: Maximum Parsimony (MP) and Maximum Likelihood (ML).



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DACTYLOSCOPIC STUDIES ON SELECTED PEOPLE OF KANYAKUMARI DISTRICT

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Abstract

The study and comprehension of fingerprints have established an individual's presence at a specific location. In this context, an investigation was undertaken involving a cohort of 500 subjects from Tamil Nadu, India, specifically from Kanyakumari City. This study aimed to determine the prevailing fingerprint patterns among genders as well as on an individual digit basis (per finger). Rolled impressions of all ten digits were meticulously documented and subjected to thorough analysis. Among the various fingerprint patterns, the ulnar loop emerged as the most prevalent pattern, constituting approximately 30% of the observed patterns. Probing into gender-specific analyses, distinct trends surfaced. Among females, the ulnar loop stood out as the most frequent pattern, closely followed by the whorl pattern, while the lateral pattern appeared as the least common. For males, the ulnar loop once again took precedence as the most dominant pattern, trailed by the arch pattern, with the accidental pattern being the least encountered.

Key words: fingerprints, Kanyakumari, Ulnar, arch, loop, whorl

Introduction

Fingerprints, characterized by raised friction ridges and grooves on fingertips, emerge during early development and remain consistent throughout life (Dikshit, 2007; Sam *et al.*, 2015). Their individuality is astonishing, with the likelihood of identical fingerprints occurring at about one in sixty-four thousand million people globally (Modi, 2002). Even identical twins possess unique fingerprints (Karmakar and Mukherjee, 2007; Nandy, 2010).

The four fingerprint classifications include Loop, Whorl, Arch, and Composite Core or Inner terminus. Forming prior to age 14, fingerprints have been used in crime investigation since 1897 and remain a cornerstone of biometric identity signs (Bardale, 2011 Mozayani and Noziglia, 2006). Fingerprint classification is essential for systems like Automatic Fingerprint Identification (AFIS) and Recognition (AFRS) (Jain *et al.*, 1999). The core and delta points, stable and rotation-invariant, aid in classification (Henry, 1900). Various methods, including structure-based and singularities-based, have been employed for classification (Karu and Jain, 1996; Jain *et al.*, 1999).

This study explores into fingerprint patterns in Kanyakumari District, identifying distinct patterns among different populations. With over ten types of fingerprint patterns found in literature,





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Department of Zoology, Holy Cross College (Autonomous), Nagarcoll – 629004, Tamil Nadu, India

A COMPARATIVE STUDY ON THE PROTEIN CONTENT OF FRESH AND OVEN-DRIED MUSCLE OF SELECTED MARINE FISHES

Arwathy Gopika K P, Joswin Ash S, Benika Prakash, **Vinoliya Josephine Mary J**, Jovila, J and **Mary Merinda Bai S**,

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Abstract

A comparative study on the proteins presents in marine fishes such as *Stolephorus indicus*, *Sardinella lemuru*, *Sardinella melanura*, *Anchoa nigropunctatus*, *Nemipterus japonicus*, *Rastrelliger kanugorta*, *Carax melampygus*, *Lethrinus lentjan*, *Chipea pallasi*, *Chelodanichthys spinosus*, *Sphyraena barracuda*, *Euthynnus affinis*, *Chirocentrus dorab*, *Scomberoides tyan*, *Okamejer komejer* was determined. The protein content of the dry sample of small fishes was highest in *Sardinella lemuru* and in the fresh sample of *Sardinella melanura*. *Rastrelliger kanugorta* and *Carax melampygus* were two medium-sized species of fishes that exhibited high protein content in oven dried samples. *Sphyraena barracuda* and *Scomberoides tyan* had high protein content in dried muscle of large sized fish. Fish that has been dried has a high protein content since moisture was removed throughout the process and concentrated protein was present in the samples. The findings of the current study showed that fish found in Indian waterways contain considerable amounts of protein and are an extremely valuable source of critical nutrients for the upkeep of a healthy body.

Key words: Marine Fishes, Fresh fish, Oven dried fish, Protein content

Introduction

Fish has proven to be an exceptionally beneficial, an essential component of the diet, and an ideal source of protein (Fawcett et al., 2007). Comparing aquatic and land-based species, Tacón and Metian (2013) found that the latter has a lower caloric density and a higher amount of omega-3 long-chain polyunsaturated fatty acids. A growing body of research indicates that fish is useful in lowering serum cholesterol and includes a high level of polyunsaturated fatty acids (PUFAs) (Haynsh et al., 2007). According to Goel et al. (2009), 90-95% of the protein in fish is metabolised by individuals, making fresh fish meat a valuable source of protein for people. Along with carbohydrates and lipids, proteins are the nutrients in the diet that provide energy and play a significant part in the development and maintenance of the human body. A vast range of additional bodily functions, including enzymatic activity and the transportation of nutrients and other biochemical molecules across cellular membranes, are also performed by proteins (Lynch et al., 2016). Tryptophan, cystine, lysine, methionine, and threonine are among the important amino acids found in fish protein, which is also recognized for enhancing digestion. However, aquatic protein contains far more peptides and important amino acids than terrestrial meat protein, which includes lysine and methionine (Tacón and Metian, 2013). The need for ingredients containing fish protein, notably dried fish protein, to create functional foods and ready-to-eat products is steadily increasing worldwide (Thorkelson et al. 2009). For creating fish protein components, fish with white flesh and low-fat content are thought to be the best species (Hultin et al., 1999). Fish can be substituted with dry fish, a low-cost dietary protein



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MORPHOMETRIC AND BIOCHEMICAL ANALYSIS OF A FEW SELECTED FRESHWATER FISHES OF KANNIYAKUMARI DISTRICT

Abiya F, Jovila J, *Vinodiya Josephine Mary J, Mary Metilda Bai S, and Benicka P.

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Abstract

Fish is becoming more popular due to its unique nutritional characteristics since there is an increasing understanding of healthy foods today. The study was carried out to study the morphometric analysis and biochemical estimation of some selected fresh water fishes such as *Tilapia mossambica*, *Anguilla bengalensis bengalensis*, *Rastbora daniconius*, and *Clarias batrachus*. Morphometric analysis of few fishes showed that an increase in length with increase in weight. In *Anguilla bengalensis bengalensis*, the length of the fish is elevated when compared to its width. The biochemical analysis of whole body of dried fish showed an increase in protein and lipid content rather than carbohydrate. Studies on proximate composition of fishes have shown that fishes are a rich source of protein and lipid. Thus, this result conclude that indigenous freshwater fish can be dried and stored and can be used as a protein source when required.

Keywords

Anguilla, Biochemical analysis, *Clarias*, Morphometric analysis, *Rastbora*, *Tilapia*

I. Introduction

The world's demand for aquatic food sources is increasing, not only due to its growing population, but also due to a preference for healthier diets for humans (Abimorad and Camero 2007). Fish is a highly healthy food that is strong in protein and has a high biochemical value for humans. Fish protein is lower in calories than red meat. It is nutritionally equivalent to and somewhat superior to other land animal proteins. The increased digestibility of fish is mostly due to the absence of strong collagenous fibres and tendons. Fish oils have a positive cholesterol lowering effect by increasing the content of high-density lipoprotein and lowering the LDL/HDL ratio. The fishes are one of the most important vertebrates, provided rich protein sources for human and several animals and important elements in the economy of many countries.

Kanniyakumari district is endowed with vast and varied resources possessing pond and river ecological heritage and also rich in biodiversity. To identify fish species and assess whether a stock is heterogeneous or homogeneous, morphometric characteristics are widely used. According to Ahirwal et al. (2023), it is an important measure for measuring growth, survival, maturity,



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Department of Zoology, Holy Cross College (Autonomous), Nagrecoil – 629004, Tamil Nadu, India

QUALITATIVE ANALYSIS OF THE PHYTOCHEMICAL CONSTITUENTS OF AQUEOUS LEAF EXTRACT OF *QUISQUALIS INDICA*

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Abstract

Quisqualis indica is a lignous vine grown as ornamental plant in tropical regions. This plant is known for its therapeutic value like antioxidant, antimicrobial and more. Traditionally it has been used as a curative of intestinal parasites, cough and abdominal pain. The present study is done to determine the phytochemicals present in aqueous extract of leaves and flowers the plant, *Quisqualis indica*. Preliminary phytochemical analysis was performed using various chemical tests such as carbohydrate, protein, glycoside, steroids, alkaloids, flavonoids, tannins, saponins, phenol and triterpenoids. The results revealed the presence of carbohydrate, flavonoids and tannins in the leaves and flower extracts.

Keywords: Phytochemical analysis, *Quisqualis indica*, aqueous extract.

Introduction

Quisqualis indica, commonly known as Rangoon creeper or Burma creeper belongs to the family Combretaceae. It is distributed across the world in tropical countries and grown as ornamental plant. The whole plant is of great therapeutic value. All extracts showed potential antioxidant and antihelminthic activity (Sotat, et al., 2020). The leaves and flowers have more bioactive substances than stem and can be used to prevent various stress-related diseases (Alokika Datta, et al., 2019).

Quisqualis indica is a lignous vine that can reach from 2.5 meters to 8 meters. Its leaves are simple, elliptical with distinct venation, rounded base and acuminate tip. The flowers are brightly coloured, fragrant in axillary pendulous racemes. Petals are lanceolate, acute and 1-3 cm long (Kritkar, et al., 1993).

Majority of pharmacological studies have been reported and found that *Quisqualis indica* showed antipyretic, anti-inflammatory, antiseptic, immunomodulatory activities (Jyoti Sahu, et al., 2012). Species of Combretaceae family are rich in phytochemicals such as flavonoids, saponins, polyphenols, tannins and so on. Anti-microbial and anti-oxidant activities were studied on the



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PHYLOGENY OF THE FRESHWATER CRAB, *OZIOTELPHUSA BOUVIERI* BASED ON COX1 GENE (CRUSTACEA: BRACHYURA: GECARCINUCIDAE)

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Abstract

This study examined the molecular taxonomy of the field crab *Oziotelphusa bouvieri*, which inhabits the paddy fields of Chenkody, Kanyakumari, Tamil Nadu, India. The phylogram based on the mitochondrial COX-1 gene was generated using a Maximum Likelihood (ML) and Neighbour Joining (NJ) tree with bootstrap support. The mitochondrial Cytochrome Oxidase-I (COX-1) gene was partially sequenced in order to genetically describe the crab. Partial COX-1 gene sequencing and alignment (BLAST) found 98.17% similarity with the freshwater crab, *O. aurantia*. The pairwise genetic p-distance, based on the Kimura 2-Parameter (K2P) model, provided information on the genetic differences between the sequences, considering the number of base substitutions. The genetic distances between *O. bouvieri* MF288046 and *O. aurantia* MN989857 is 0.763. Based on the similarity between the COX1 sequences, *O. bouvieri* may represent a distinct species or at least a genetically distinct population within the *Oziotelphusa* genus.

Key words: *Oziotelphusa*, phylogeny, freshwater crabs, crustaceans, Gecarcinucidae

Introduction

Freshwater crabs (Crustacea: Decapoda: Brachyura Linnaeus, 1758) make up about 20% of Brachyuran biodiversity, with over 1300 known species. They are significant detritivores macroinvertebrates in freshwater ecosystems, contributing to ecological structure (Dobson *et al.*, 2007). Research on freshwater crabs typically focuses on taxonomy and species descriptions (Tavabe *et al.*, 2022). Among freshwater crabs, the most diverse gecarcinucid genus is *Oziotelphusa* Muller, 1887, found in Sri Lanka and the Deccan Peninsula of India (Bahir and Yeo 2005; Pati and Sharma 2012; 2014, Pati *et al.*, 2014; Raj *et al.*, 2017; Pati and Vargila, 2019; Teeni *et al.*, 2021). Identifying these species in the field is challenging due to morphological similarities and variations, hindering our ability to assess their diversity and conservation status. Molecular techniques, like COX1 gene analysis, are becoming valuable for accurate identification and discovering new species (Tavabe *et*



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QUALITATIVE ANALYSIS OF THE PHYTOCHEMICAL CONSTITUENTS OF
AQUEOUS LEAF EXTRACT OF *SENNA AURICULATA*

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Abstract

India is a well-known country for its traditional medicines, where extracts of various herbs are used as a component in the preparation of medicine. Various species belonging to different families are said to have numerous medicative properties. Likewise species belonging to the family fabaceae are said to have variety of therapeutic properties like antitumour, antidiabetic, antifertility, anti-helminthic, antiameobic, anti-inflammatory, antimicrobial, antioxidant, antiparasitic, cytotoxic, hepatoprotective, hypoglycaemic and immunomodulatory. *Senna auriculata* an evergreen Indian shrub belonging to the family fabaceae were used for the present study. The aqueous leaf extract of *Senna auriculata* is analysed for the phytochemical constituents like carbohydrate, protein, glycoside, steroids, alkaloids, flavonoids, tannins, saponins, phenol and triterpenoids. The result revealed the presence of phytochemicals such as carbohydrates and tannins, whereas protein, glycoside, steroids, alkaloids, flavonoids, saponins, phenol and triterpenoids were absent.

Key words: *Senna auriculata*, qualitative analysis, aqueous extract, leaf extract.

Introduction

India is one of the countries which is known for its traditional medicine, where extracts of various herbs are used in folk medicine. Species belonging to the family fabaceae has various uses in pharmaceutical, textiles, cosmetics and food sectors. It has numerous medicative properties such as antitumour, antidiabetic, antifertility, anthelmintic, antiameobic, anti-inflammatory, antimicrobial, antioxidant, antiparasitic, cytotoxic, hepatoprotective, hypoglycaemic and immunomodulatory (Maroyi Alfred, 2023). Species of fabaceae family has a rich source of phytochemicals such as flavonoids, lectins, saponins, alkaloids, carotenoids and phenolic acid. Consumption of plant parts of various species of fabaceae family lowers the risk of cancer, as the phytochemicals of this family is effective in the prevention and treatment of cancer (Usman Muhammad, 2022)

This article focuses on the preliminary phytochemical analysis of aqueous leaf extract of the plant *Senna auriculata*, belonging to the family fabaceae and subfamily caesalpinioideae.



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REMEDIATION OF WATER SAMPLES BY AGROWASTE

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Introduction

Water stands as a pivotal and abundant constituent within the ecosystem, playing a vital role for the sustenance and advancement of all life forms on Earth. Presently, our planet remains unique, encompassing nearly 70% of its surface with water. However, the escalating human populace, rapid industrialization, widespread application of agricultural fertilizers, and anthropogenic activities have led to a distressing pollution of this precious resource with hazardous substances. Consequently, it becomes imperative to conduct regular assessments of drinking water quality. Such evaluations are crucial because the consumption of contaminated water has been linked to a multitude of waterborne illnesses that afflict human populations. Comprehending the intricate biological mechanisms is a challenge, yet a deeper exploration of water chemistry offers profound insights into ecosystem metabolism and expounds upon the overarching hydro-biological interrelationships. (Basavaraja *et al.*, 2011). This work has been carried out to remediate contaminated water in an ecofriendly manner.

Materials and Methods

Water remediation study using corncobs was conducted on pond and stream water samples from Karthikaivadali village, Kanyakumari district. Corncobs were cleaned, dried, and introduced into 5-liter water samples. Modified setup involved suspending corncobs in water for 25 days. Collected samples underwent quality analysis before and after treatment. Physico-chemical parameters were assessed using standard methods by TWAD Board.

RESULT

A comprehensive water remediation study using corncobs was conducted on water samples sourced from a village in Kanyakumari. The focus was on the pre and post-remediation assessment of various physical and chemical parameters. The turbidity, which indicates water clarity, was notably reduced post-remediation. Pond water's turbidity decreased from an initial 3 NTU to a pristine 1 NTU, while stream water decreased from 2 NTU to 1 NTU.

The Total Dissolved Solids (TDS) levels exhibited substantial reductions. In pond water, TDS decreased from an initial 470 mg/l to 259 mg/l, and in stream water, from 409 mg/l to 193 mg/l. The Electrical Conductivity (EC) values, reflecting the water's ability to conduct electricity, experienced



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**STUDY ON THE EFFECT OF DIFFERENT PHYSICOCHEMICAL FACTORS ON
AQUATIC ENVIRONMENT**

Agnel J., *Anitha C., Bhahima Muruzitha S., Sona SM., Gnana Soundari Reshma E. and
Azeena Beevi R.

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Abstract

Aquatic ecosystem is defined as a water-based habitat in which living species interact with the environment's physical and chemical properties. Aquatic organisms are living species that rely on the environment for their food, habitat, reproduction and other critical functions. Abiotic and biotic factors make up the characteristics of aquatic ecosystems. Water plays a significant role in the management of world-scale ecosystem processes in aquatic systems, connecting the atmosphere, lithosphere, and biosphere by transferring material between them and allowing chemical reactions to occur. Factors that affect aquatic ecosystems include water flow rate, salinity, acidity, oxygen, light levels, depth, and temperature. Light levels affect photosynthesizing plants and predation. Oxygen content and water flow rates affect the oxygen intake and food received by animals. In this study, the effect of different physicochemical factors on aquatic environment, *Poecilia reticulata* as an experimental aquatic organism. However, the fish *Poecilia reticulata* tested with different factors like crude oil, detergents, hot and cold water, liquid and solid pesticide and pH at various concentrations to the container which contains *Poecilia reticulata*. The results indicate different concentrations of the tested samples affect the respiratory tract of *Poecilia reticulata* and caused death due to the suffocation, the fish couldn't survive under certain conditions.

Key words: Aquatic Ecosystem, Detergents, *Poecilia reticulata*, Photosynthesis, Water



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Department of Zoology, Holy Cross College (Autonomous), Nagercoil – 629004, Tamil Nadu, India

SCREENING OF ANTIMICROBIAL POTENTIAL OF THE PLANT *CLERODENDRUM PHLOSMIDS*

Prakash Shoba S., Arul Deepika A., Venci Candida X., Anantha Lakshmi S., Denno E., Preethi S., and Rosari Jennifer S.

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ABSTRACT

This study was to evaluate the antibacterial and antifungal activities of different solvent extracts of leaves of *Clerodendrum phlosmids* against multi – drug resistant clinical pathogen. The ethanol extract of leaves of *Clerodendrum phlosmids* inhibited the growth of all the tested bacteria *Escherichia coli* (12.33 mm), *Pseudomonas aeruginosa* (14.33 mm), *Bacillus subtilis* (12 mm), *Klebsiella pneumonia* (10.66 mm) and *Staphylococcus aureus* (12.66 mm). The butanol extract of leaves of *Clerodendrum phlosmids* inhibited the growth of all the tested bacteria *Escherichia coli* (9.66 mm), *Pseudomonas aeruginosa* (9.33 mm), *Bacillus subtilis* (10 mm), *Klebsiella pneumonia* (9.66 mm) and *Staphylococcus aureus* (9.33 mm). The acetone extract of leaves of *Clerodendrum phlosmids* inhibited the growth of all the tested bacteria *Escherichia coli* (8 mm), *Pseudomonas aeruginosa* (10.33 mm), *Bacillus subtilis* (11.66 mm), *Klebsiella pneumonia* (8.33 mm) and *Staphylococcus aureus* (9mm). The acetone extract of leaves of *Cardiospermum halicacabum* inhibited the growth of all the tested bacteria maximum inhibition observed in *Staphylococcus aureus* (13.33 mm). The ethanol extract of leaves of *Clerodendrum phlosmids* inhibited the growth of all the tested bacteria maximum inhibition observed in *Pseudomonas aeruginosa* (14.33 mm). The butanol extract of leaves of *Clerodendrum phlosmids* inhibited the growth of all the tested bacteria maximum inhibition observed in *Bacillus subtilis* (10 mm) and *Klebsiella pneumonia* (9.66 mm). The acetone extract of leaves of *Clerodendrum phlosmids* inhibited the growth of all the tested bacteria maximum inhibition observed in *Bacillus subtilis* (11.66 mm).

Key words: Balloon vine, antibiotic, antimicrobial, microbes, bacteria.



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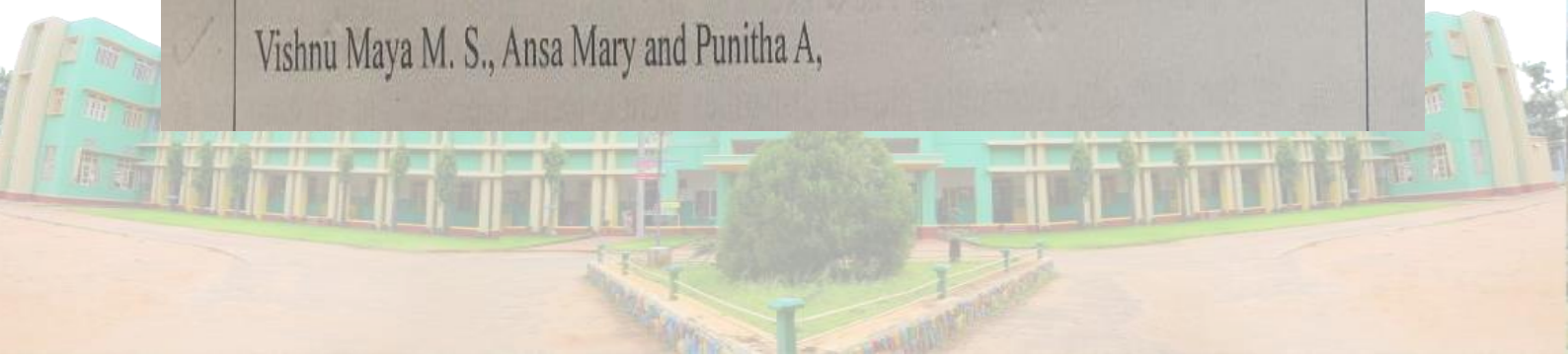
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Department of Zoology, Holy Cross College (Autonomous), Nagercoil – 629004, Tamil Nadu, India
**IN VITRO ANTIBACTERIAL ACTIVITY OF AQUEOUS LEAF EXTRACT OF
ANISOMELES MALABARICA (L.) R. BR. EX SIMS**

Jeba Preethi Jansi P.C. and **Jeni Chandar Padua**

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Abstract

The emergence and spread of antibiotic resistance, as well as the evolution of new strains of disease causing agents, are of great concern to global human health. Commonly used medicinal plants could be an excellent source of drugs to fight off this problem. *Anisomeles malabarica* (L.) R. Br. ex Sims is an easily available traditional medicinal plant that has been used for centuries. In this view, the present study aims to evaluate the antibacterial potential of aqueous leaf extract of *Anisomeles malabarica*. Antibacterial activity of leaf extract was assessed by the agar disc diffusion method against Gram-positive bacteria (*Bacillus cereus* and *Enterococcus faecalis*) and Gram-negative bacteria (*Escherichia coli* and *Proteus vulgaris*). The minimum inhibitory concentration (MIC) was determined using the broth microdilution method. Leaf extract of *Anisomeles malabarica* exhibited remarkable antibacterial activities against the tested microorganisms and the result was compared to the standard drug Amikacin. Gram-negative bacteria were more effectively combated by leaf extract than Gram-positive bacteria. The zones of inhibition of leaf extract against the tested bacterial pathogens were found in the range of 15.5 to 19.8 mm at a concentration of 100 µg/ml, along with their respective MIC values, ranging from 3.12 to 12.5 µg/ml. Among the tested microorganisms, *Escherichia coli* were found to be the most sensitive strain to the leaf extract of *Anisomeles malabarica*, with an inhibitory zone of 19.8 mm and a MIC of 3.12 µg/ml. The results confirmed the efficacy of *Anisomeles malabarica* as natural antimicrobials and suggested the possibility of employing them in drugs for the treatment of infectious diseases caused by the test organisms.

Keywords: Antibacterial activity, disc diffusion, *Anisomeles malabarica*, minimum inhibitory concentration, zones of inhibition.



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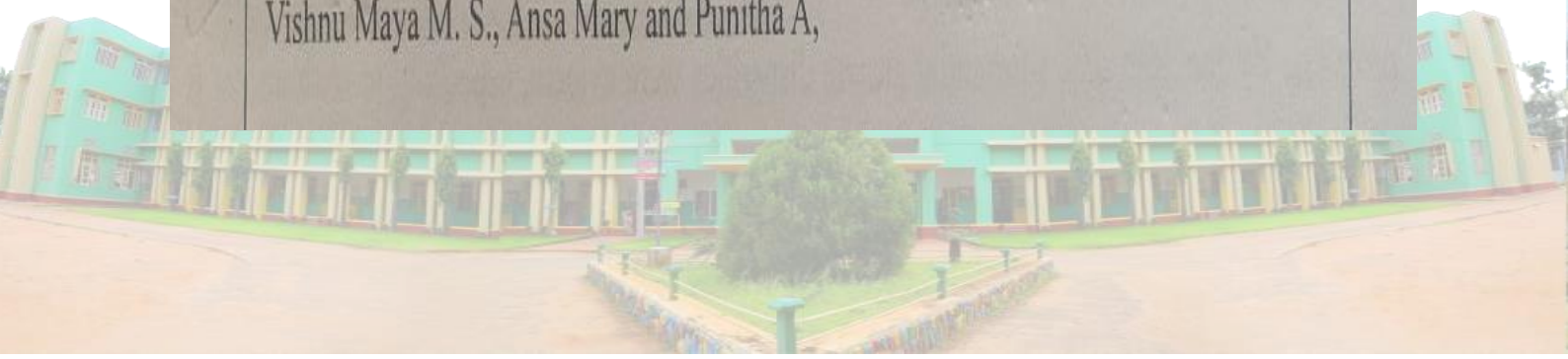
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**DIVERSITY, DISTRIBUTIONAL STATUS OF THE ENDEMIC STREAM-FISHES IN
MANJALARU STREAM OF WESTERN GHATS**

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Abstract

The current study encompasses various key dimensions, including the analysis of bio-ecological parameters within freshwater streams, as well as the assessment of diversity, seasonality, and distributional patterns of endemic stream-fish species in the Manjalaru streams of the Palani hills. Nevertheless, the implementation of effective conservation measures to address the adverse impacts on these ecosystems has been notably sluggish and insufficient. Consequently, numerous aquatic fish species are experiencing a rapid decline. The primary factors contributing to the decline in biodiversity within freshwater streams are linked to habitat degradation and reduced water depth, the introduction of non-native species, water diversion activities, pollution, and the consequences of seasonal variations. The genus *Cyprinidae*, presently comprising a collection of species, encompasses a diversity of organisms within its taxonomic structure. Specifically, this genus comprises a minimum of eleven distinct species, all of which are native to the freshwater ecosystem of the Manjalaru stream situated in the Palani Hills of the Western Ghats. While these species are commonly encountered in the southern region of India and have historically served as a source of sustenance, there has been limited understanding regarding the extent of morphological variations existing both between and within these species. Additionally, the interrelationships between species, as well as the intraspecific genetic diversity, remained largely unexplored until now. This study has contributed valuable insights into the conservation and distributional patterns observed within the *Punitius* species, highlighting a noteworthy level of diversity among the species under investigation. The findings underscore the necessity for more comprehensive bio-geographic sampling and a thorough analysis of morphological data to unveil the inherent natural lineage within this genus. The outcome of this research hold potential significance for future endeavours, facilitating an enhanced understanding of the diversity, distribution, and phylogenetic positioning of stream fishes within the Manjalaru stream situated in the Palani Hills.

Key Words: Bio-ecological studies, Endemic fishes, diversity conservation, distribution status, Palani hills.



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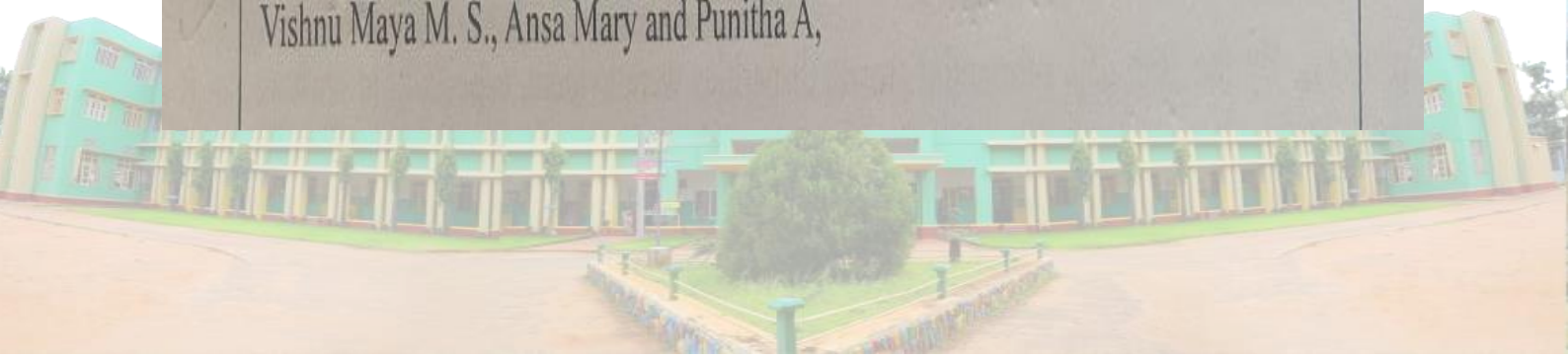
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**BACTERICIDAL ACTIVITY OF LEAF EXTRACT OF *PHYLA NODIFLORA* AGAINST
BACILLUS SUBTILIS AND *PSEUDOMONAS AERUGINOSA***

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Abstract

Phyla nodiflora is a well-known medicinal plant in Ayurvedic and Unani medicine. Cold, diarrhoea, respiratory disorders, gastrointestinal infections, diabetes, fungal infections, jaundice and cardiovascular diseases have been traditionally treated using *Phyla nodiflora* leaves. The present study aimed to evaluate the bactericidal activity and minimum inhibitory concentrations of *Phyla nodiflora* leaf extract against Gram- positive and Gram-negative bacterial strains such as *Bacillus subtilis* and *Pseudomonas aeruginosa* using disc diffusion method. Based on the data presented, the largest zone of inhibition was found to be against *P. aeruginosa* (23 mm) and the lowest inhibition zone was observed for *B. subtilis* (13 mm) at 100 µl/ml. The MIC values recorded for *P. aeruginosa* was 3.12 µl/ml and *B. subtilis* was 12.5 µl/ml. Disc diffusion method revealed a high degree of activity against bacterial strains. As a result, the current method may be effective in identifying a new bioactive compound for the development of novel medications. Thus, it may be used as a strong antimicrobial agent against *P. aeruginosa* pathogens.

Keywords: *Pseudomonas aeruginosa*, *Bacillus subtilis*, *Phyla nodiflora*, MIC, Bactericidal



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DETECTION OF ADULTERATION IN FEW SELECTED COMMON FOOD PRODUCTS

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Abstract

Food is a stuff, one of the basic necessities for sustenance of life. Pure, fresh and healthy diets is most essential for all the people. Adulteration is a legal term meaning that a food product fails to meet legal information. Most of the times, these foods are prone to food fraud and adulteration, and put health disorder to consumers. Food adulteration is one among these different emerging areas of science. Most of the foodstuffs in the market are adulterated in varying degrees. Adulterants can also be elaborated as chemical substances which should not be contained within a given food or beverage, and but, may be intentionally added to more expensive substances to increase visible quantities and reduce manufacturing costs, or for some other deceptive or malicious purpose. Thus, food adulteration is still becoming one of the significant public health issues in different countries. The main objective of this work is to analyse the common food adulterants, one among of the biggest problems faced in present time that food articles like milk, ghee, honey, rice, chilli powder, turmeric powder and asafoetida are being adulterated from many ways. The results showed that, all the tested samples were adulterated with adulterants. Due to adulteration a number of diseases, especially life style diseases are blooming throughout the world. This alarming should be warranted for the people to identify adulterant food items and should report to the Government, so that this fraudulent could be minimised.

Key words: Adulterants, Consumers, Diseases, Foodstuff, Lifestyle, Public Health.



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RADIATION ON HUMAN HEALTH IN FEW SELECTED AREAS

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Radiation and radioactive materials are part of our environment. The radiation in the environment comes from both cosmic radiation that originates in outer space, and from radioactive materials that occur naturally in the earth and in our own bodies. Together, these are known as background radiation. Everyone is exposed to background radiation daily. In addition, radiation and radioactive materials are produced by many human activities. Radiation is produced by x-ray equipment and by particle accelerators used in research and medicine. Radioactive materials are produced in nuclear reactors and particle accelerators.

Surveys were carried out in 4 areas where there were more cell phone towers and industries were located. The areas selected were Elluvilai, Enayamputhanthurai, Karkadu and Muttom from the period of March-May 2022. The particle detector, nuclear counter was used to evaluate radioactivity in the specific sand samples. The results showed that the Alpha radiation in Karkadu and Enayamputhanthurai were more when compared to Muttom and Elluvilai. Though the background count was same in all the four areas tested the net count also repeats the same as more radiation in Karkadu and Enayamputhanthurai. Beta radiation in Muttom was comparatively more and there was a negligible count down in Karkadu. Least beta radiation was observed in Enayamputhanthurai followed by Elluvilai. They did not follow the norms that are set for the purpose and ignorantly put the lives of people at risk of cancer and other disastrous ailments was noticed in Karkadu when compared to other areas.

Key words: beta radiation, radiation, nuclear counter, x-ray



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A STUDY ON ANTIMICROBIAL ACTIVITY OF *DENDROBIUM LONGICOMU*

Vishnu Maya² M.S., Ansa Mary¹ Punitha¹ A.

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²Department of Botany, Holy Cross College (Autonomous), Nagercoil

Abstract

The present study was undertaken to investigate the potential anti-microbial activity from *Dendrobium longicomu* against microbes. The antibacterial and antifungal activities of various solvent extract (ethanol, methanol, chloroform and aqueous) of *Dendrobium longicomu* (leaf) were determined against a wide variety of pathogenic bacteria (*Escherichia coli*, *Pseudomonas aeruginosa*, *Klebsiella pneumoniae* *Staphylococcus aureus* and *Proteus mirabilis*) and fungi (*Candida albicans* and *Aspergillus niger*) respectively. Ethanolic and methanolic extracts were effective against all the organisms tested. Methanolic leaf extracts were found to be active against *Klebsiella pneumoniae* (23mm) compared to other extracts tested. In conclusion, these *Dendrobium* species can be used as antibiotic agents.

Keywords: Antibacterial, Antifungal, *Dendrobium longicomu*, antibiotic.



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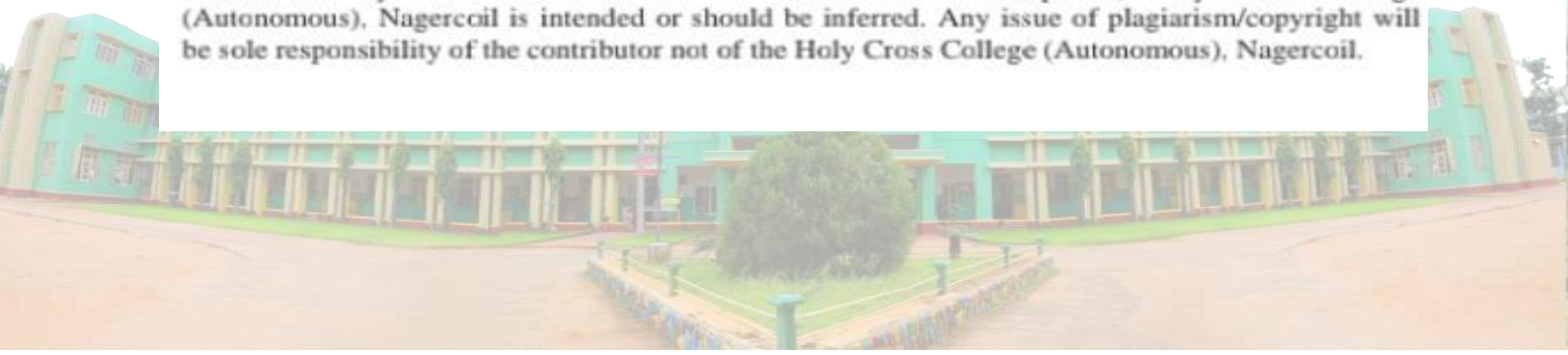
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Deep learning is a cutting-edge branch of artificial intelligence inspired by the human brain's neural networks. It involves training intricate algorithms, called neural networks, to analyze and learn patterns from vast amounts of data. This technology has revolutionized various fields, enabling machines to autonomously recognize objects, understand language, play games, and even create art. Deep learning's power lies in its ability to uncover intricate insights from data, leading to advancements in fields like healthcare, finance, and self-driving cars. As it continues to evolve, deep learning holds the potential to reshape how we perceive and interact with the world.



Dr. F. Fanax Femy, a seasoned computer science professional, possesses 16 years of impactful teaching and research experience. Their expertise, including a Ph.D. in Computer Science, 5 research publications, and leadership in organizing webinars, reflects dedication to education and advancement.

Dr.F.Fanax Femy

Unveiling Intelligence: A Journey into Deep Learning Landscapes

Image formation, Image Segmentation, Deep Architecture



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Chapter 1- Introduction



1.1. Introduction

What is Deep Learning?

Deep learning is a subset of machine learning that involves training artificial neural networks to perform tasks by learning patterns and features directly from data. In the context of computer vision, deep learning models are trained to recognize and understand visual patterns in images and videos.

Neural Networks: Building Blocks of Deep Learning

At the core of deep learning are artificial neural networks, which are inspired by the human brain's interconnected neurons. A neural network consists of layers of interconnected nodes (neurons) that process and transform data.

Convolutional Neural Networks (CNNs) for Computer Vision

Convolutional Neural Networks (CNNs) are a type of neural network specifically designed for computer vision tasks. They excel at automatically learning hierarchical features from raw image data.

Key components of CNNs:

- i) Convolutional Layers: These layers perform convolution operations to extract features from the input image. Each convolutional layer consists of multiple filters that scan the image and highlight various features like edges, textures, or shapes.
- ii) Pooling Layers: Pooling layers reduce the spatial dimensions of the feature maps, helping to decrease the computational load and retain important features.



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Exploration of Different Machine Learning Techniques

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Abstract

Machine learning is an important part of the growing data science field. Machine learning is a subset of artificial intelligence and is primarily concerned with developing algorithms that allow computers to learn independently from data and past experience. Machine learning uses various algorithms to build mathematical models and make predictions based on historical data and information. In this survey, we provide theoretical representations and fundamentals of machine learning techniques such as Support Vector Machines (SVM), K-Nearest Neighbors (KNN), Decision Trees, Clustering, and Neural Networks.

Keywords: Machine learning, Supervised learning, Unsupervised learning, Support vector Machine(SVM), Neural networks.

1. Introduction

Machine learning is a growing technology that enables computers to automatically learn from past data. It is a branch of artificial intelligence (AI) that focuses on using data and algorithms to mimic the way humans learn, with incremental improvements in accuracy. It is currently used for various tasks such as image recognition, speech recognition, email filtering, Facebook auto-tagging, and recommendation systems.

The term machine learning was first introduced by Arthur Samuel in 1959. Machine learning algorithms use historical sample data, called training data, to create mathematical models that help predict and make decisions without the need for explicit programming. As big data continues to expand and grow, we believe the market demand for data scientists will increase. These should help you identify the most relevant business questions and the data to answer them. ML techniques play an important role in many applications such as social media, education, finance, bioinformatics, healthcare, energy storage, and weather forecasting.

2. Types of ML techniques

ML techniques fall into two different types: supervised learning and unsupervised learning. Figure 1 shows a schematic diagram of ML Technique.





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**A Novel Convolutional Neural Network Framework for Automatic Detection of
Brain Tumors in MRI Images**

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Abstract

Brain tumor detection in early-stage plays important role in improving patient treatment and survival. Evaluating magnetic resonance imaging (MRI) images manually is a tedious task due to more number of images produced in the clinic routinely. So, there is a need for using a computer-aided diagnosis (CAD) system for early detection and classification of brain tumors as normal and abnormal. In this work, a three-step preprocessing is proposed to enhance the quality of MRI images, along with a new Deep Convolutional Neural Network (DCNN) architecture for effective diagnosis of glioma, meningioma, and pituitary. The architecture uses batch normalization for fast training with a higher learning rate and ease initialization of the layer weights. This was followed by the binary thresholding and Convolution Neural Network (CNN) segmentation techniques for reliable detection of the tumor region. Training, testing, and validation datasets are used. An outstanding competitive accuracy is achieved of 98.22% overall, 99% in detecting glioma, 99.13% in detecting meningioma, 97.3% in detecting pituitary and 97.14% in detecting normal images when tested on a dataset with 3394 MRI images. Experimental results prove the robustness of the proposed architecture increased the detection accuracy of a various brain diseases in a short time.

Key Words: Classification, deep convolutional neural network, normalization

1. Introduction

The human brain is the most important part of the body because it controls most of human action such as memory, speech, thoughts and leg and arms movements. Brain diseases are mostly caused by the abnormal growth of brain cells, which directly damage the brain structure and lead to brain cancer. Moreover, the complexity of brain construction is a major challenge, so timely and accurate diagnosis is necessary. The MRI images can provide better visualization of contrast and spatial definition. The detection of brain abnormalities process is an important issue to determine whether the abnormalities exist or not in MRI images. Researchers use deep learning in a wide zone with many medical science fields. Since 2017, researchers have used deep convolutional neural networks (DCNNs) a lot, which achieved great success in the image classification process. Lately, DCNNs also scored promising results in the process of medical images classification.

2. Literature Review

Tumors are caused by abnormal growth of cells. Brain tumors can be benign (noncancerous tumors) or malignant (cancerous). They are also classified as primary and secondary. Primary tumors start in the

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Successful Teaching/Research Practices - Volume 1

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THE ESSENTIAL ELEMENTS NEEDED FOR A SUCCESSFUL
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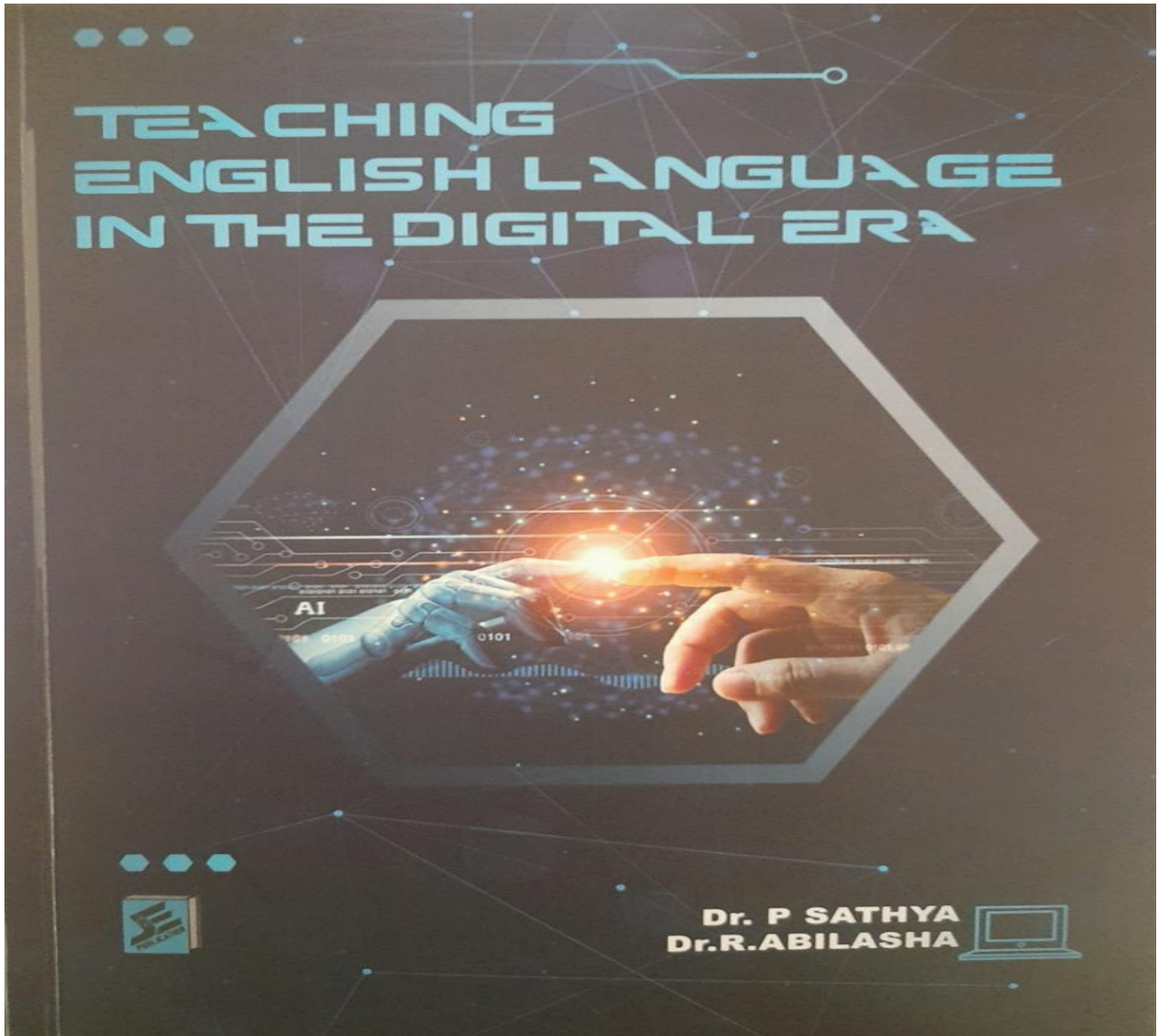
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Abstract

In the world of modernization, research plays a major role towards innovation and advancement. The world with various advancements is the product of research. The art of research is highly complicated and the skillful practices of research go on with changes between the ages. The researchers always get confused how to equip themselves to be good at research. The answer for this question is simple as research needs a unique skill that every researcher has to be accompanied with uniqueness, sincerity and dedication. Without the basic aspects, research will never be on the right track. At present, the researchers are provided with various equipment for the betterment of their valid research. The researcher who utilises all the available resources could bring out a distinct product which addresses the entire world. Research includes integrity and code of conduct and one should consider both of them as their eyes for success. Research always focuses on the needs of the society and the successful research always brings positivity to the society and it invokes the knowledge. It provides solution for the problems and suggestions for the futuristic research.





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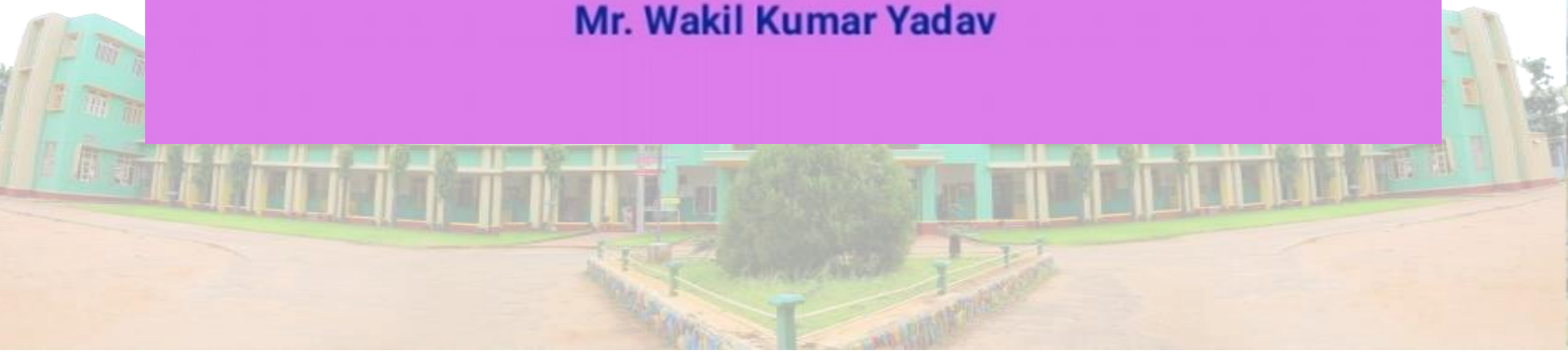
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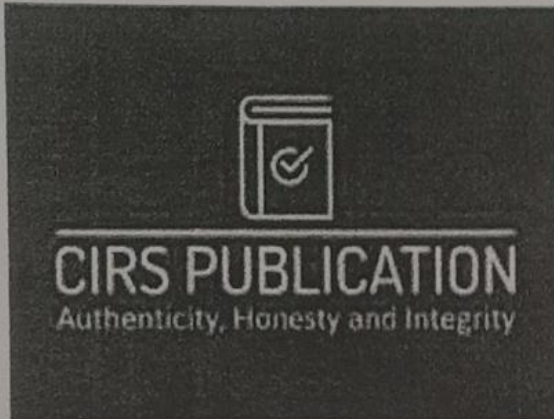
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Dr. H. Jimsy Asha¹ Benitta. G²

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Abstract

In the tapestry of human creativity, literature and art stand as two vibrant threads that shape and reflect the essence of culture and society. The profound influence of art on literature and literature on art has long been a subject of fascination and exploration. This entwined relationship is akin to the collaboration of a master painter and their canvas, a symphony where words and images harmonize resonating through time and across generations. *The Goldfinch* occupies a unique place in the realm of contemporary literature, beckoning readers into a world where the boundaries between art and literature blur and the resonance of visual culture echoes with profound intensity. The paper entitled, “Transcending Mediums: Exploring the Vivid Spectrum of Visual Culture and Artistic Expression in Donna Tartt's *The Goldfinch*” delves into the intricacies of visual culture studies as reflected in

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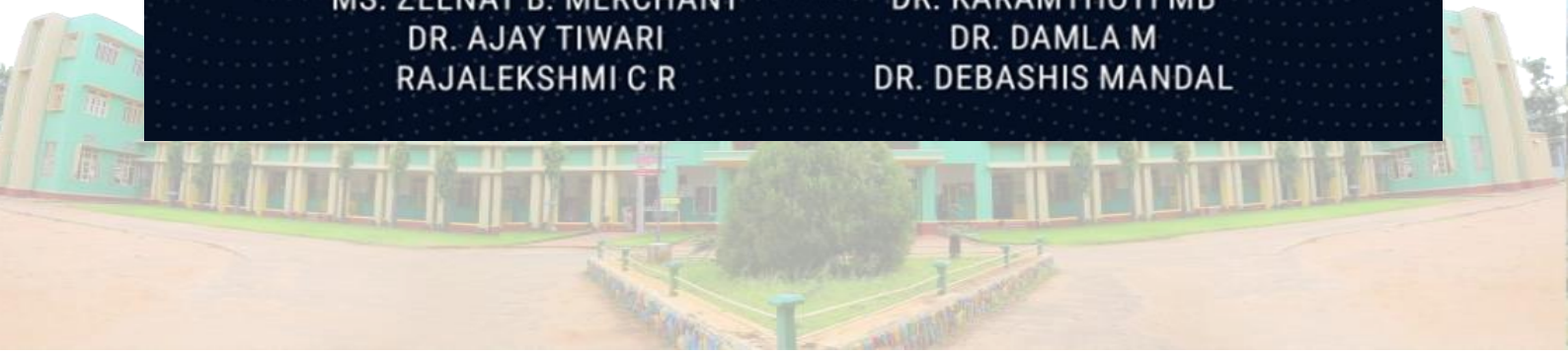
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EXPLORATION OF JEWISH HOLIDAYS IN ABIGAIL POGREBIN'S
*MY JEWISH YEAR: 18 HOLIDAYS, ONE WONDERING JEW***



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❖ **ABSTRACT:**

Jewish rituals and holidays form the bedrock of Jewish identity, culture and faith. Rooted in ancient traditions and religious texts, these rituals and holidays carry deep symbolic meaning uniting the Jewish community across generations. From the weekly observance of Sabbath to the solemn reflection of Simchat Torah, each ritual and holiday holds a unique place in the hearts of the Jewish people, representing historical events and values that have sustained Jewish heritage through millennia. The chapter entitled, "Cultural Fabric and Ritual Dynamics: A Durkheimian Exploration of Jewish Holidays in Abigail Pogrebin's My Jewish Year: 18 Holidays, One Wondering Jew" seeks to examine Durkheim's theory of rituals through the lens of Jewish religious observances, specifically the holidays integral to the Jewish calendar.

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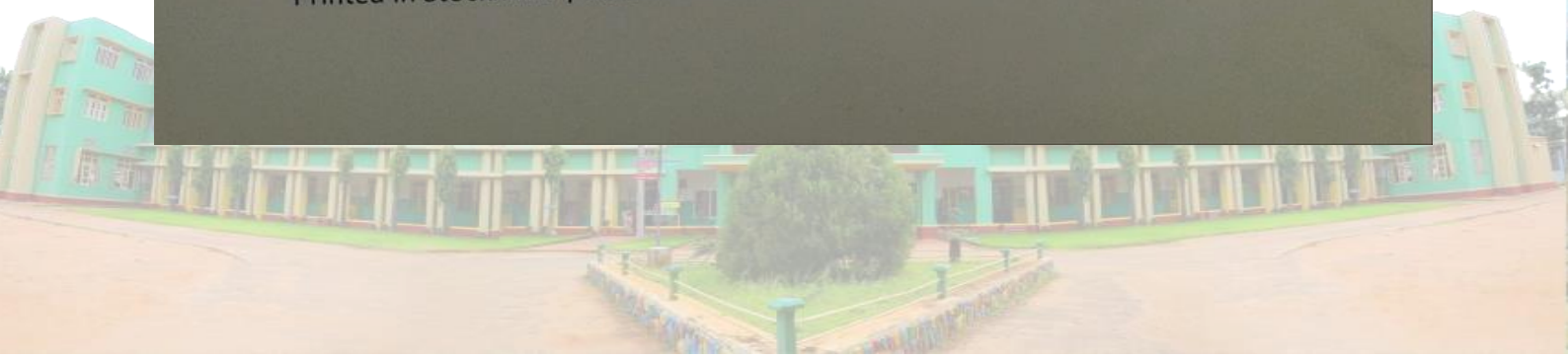
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**QUALITY BEYOND COMPLIANCE: IQAC'S ENDEAVOR FOR
ACADEMIC EXCELLENCE AND SUSTAINABLE HIGHER EDUCATION
STANDARDS**



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❖ ABSTRACT

In the rapidly evolving landscape of higher education, quality assurance has become a linchpin for educational institutions worldwide. To ensure the delivery of quality education and the continual improvement of academic and administrative performance, higher education institutions have increasingly turned to the Internal Quality Assurance Cell as a vital mechanism. IQAC serves as a strategic body steering the institution towards excellence by setting benchmarks, fostering a culture of continuous improvement and aligning with the guidelines and standards set by NAAC. The chapter entitled, "Quality Beyond Compliance: IQAC's Endeavor for Academic Excellence and Sustainable Higher Education Standards" delves into the intricate and indispensable role of the IQAC within the domain of higher education, providing insights into its functions, responsibilities and

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QUALITY EDUCATION: THE CATALYST FOR GLOBAL PROGRESS AND SUSTAINABLE FUTURE



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❖ ABSTRACT:

In the pursuit of a more equitable and sustainable world, the United Nations' Sustainable Development Goals have emerged as a globally recognized framework for addressing complex socio-economic and environmental challenges. Among these goals, SDG 4 which emphasizes quality education stands as a cornerstone for achieving sustainable development. The chapter entitled, "Quality Education: The Catalyst for Global Progress and Sustainable Future" comprehensively explores the multifaceted dimensions of SDG 4 examining its significance, objectives and challenges. It underscores the profound importance of quality education not merely as a goal in itself but as a transformative force that touches every facet of human life. The research delves into the compelling significance of SDG 4 acknowledging its status as a linchpin for achieving sustainable development. The study illuminates the numerous challenges that SDG 4 faces on the road to realization and contends that SDG 4

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A PARADIGM SHIFT IN EDUCATION: DECIPHERING THE DYNAMICS OF PEER AND COLLABORATIVE LEARNING IN MODERN PEDAGOGY



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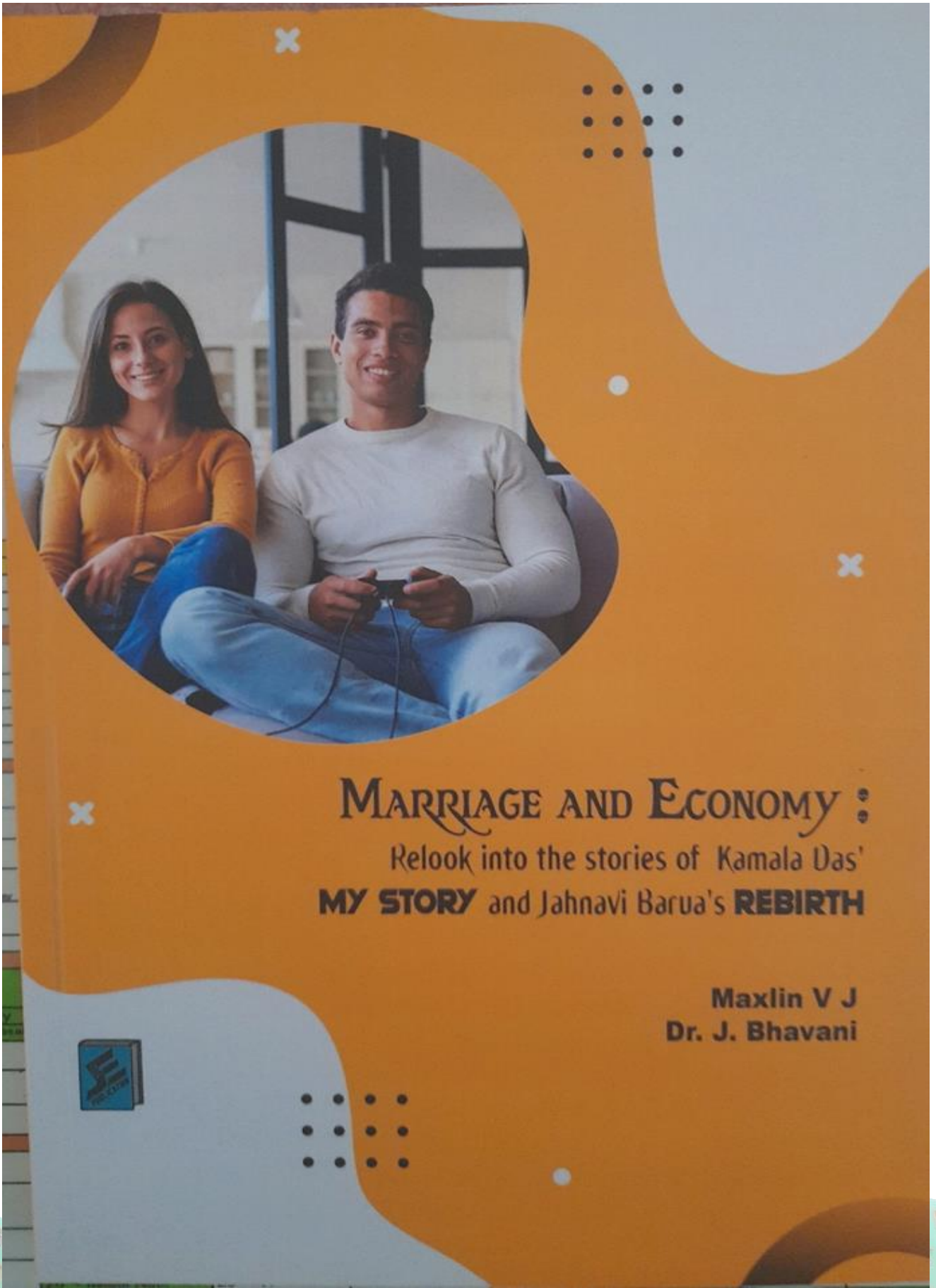


BENITTA. G

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Department of English
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❖ ABSTRACT:

The educational landscape is evolving at an unprecedented pace, driven by technological advancements, shifting societal needs and the growing awareness that conventional teaching methods no longer suffice in equipping students with the skills and competencies they need to excel in a complex and interconnected world. At the forefront of this transformation are peer and collaborative learning methodologies which emphasize the importance of interaction, cooperation and the shared pursuit of knowledge. The chapter entitled, "A Paradigm Shift in Education: Deciphering the Dynamics of Peer and Collaborative Learning in Modern Pedagogy" delves deeply into the multifaceted realm of peer and collaborative learning. It endeavors to unravel the essence of these methodologies, investigate their theoretical origin, benefits, challenges and



MARRIAGE AND ECONOMY :
Relook into the stories of Kamala Das'
MY STORY and Jahnavi Barua's **REBIRTH**

Maxlin V J
Dr. J. Bhavani



About the book

Book Name : **Marriage and Economy: 'Relook into the stories of Kamala Das' *My Story* and Jahnvi Barua's *Rebirth***

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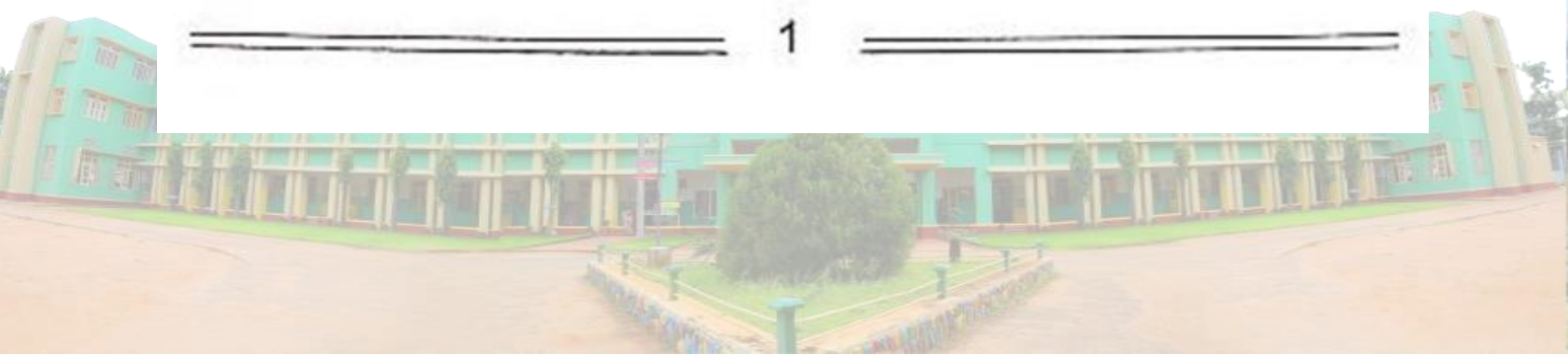
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Introduction

Language is a medium for anyone to express oneself. The rules and ideals that govern our society are reflected in literature. Literature is the written work of a certain culture, subculture, religion, philosophy, or the study of such written material, which may appear in the form poetry or prose. Literature is often influenced by social-economic scenarios also contains the universe inside itself. Literature is doing the vital of teaching human beings how to live and reflect our identity as human beings besides replicating the social and cultural life of the time in which it has been written. Literary works not only a source of entertainment but also a true source of information about a specific era and culture.

The book entitled “Marriage and Economy: Relook into the stories of Kamala Das’ *My Story* and Jahnvi Barua’s *Rebirth*” examines the socio-economic environment of twentieth and twenty-first-century India, as described in *My Story* by Kamala Das and *Rebirth* by Jahnvi Barua, and the common beliefs and behaviours of Indian married women. The content of the book is subjugated by two major events: Das’ life, from the age of four, through British colonial and missionary schools in Calcutta where she had to deal with racist prejudice; through the harsh and indulgent relationship with her husband; through her sexual awakening; her literary career; extramarital affairs; the birth of her children; and, finally, a gradual but steady coming to terms with her partner, writing, and sexuality. Kaberi, a young woman dealing with an unsure marriage, is the subject of the story *Rebirth*, the mother’s intense attachment to her unborn child is also intimately shown in this book. In contrast to the society and cultural unrest that predominated throughout India’s marriage life, the author focuses mostly on her identity in her autobiography.



Translating Across Genres:
A CASE STUDY

ASMIN JANISHA P
PATRICK VINNAPADI
SUBHA GANAPATHY



The project work entitled "Fictional and Nonfictional Writing: A Comparative Study of Graham Greene's The Power and the Glory and The Lawless Roads" examines about the subject which has been rendered in two different genres by the same author and how the translation plays a challenging role in translating two different genres.

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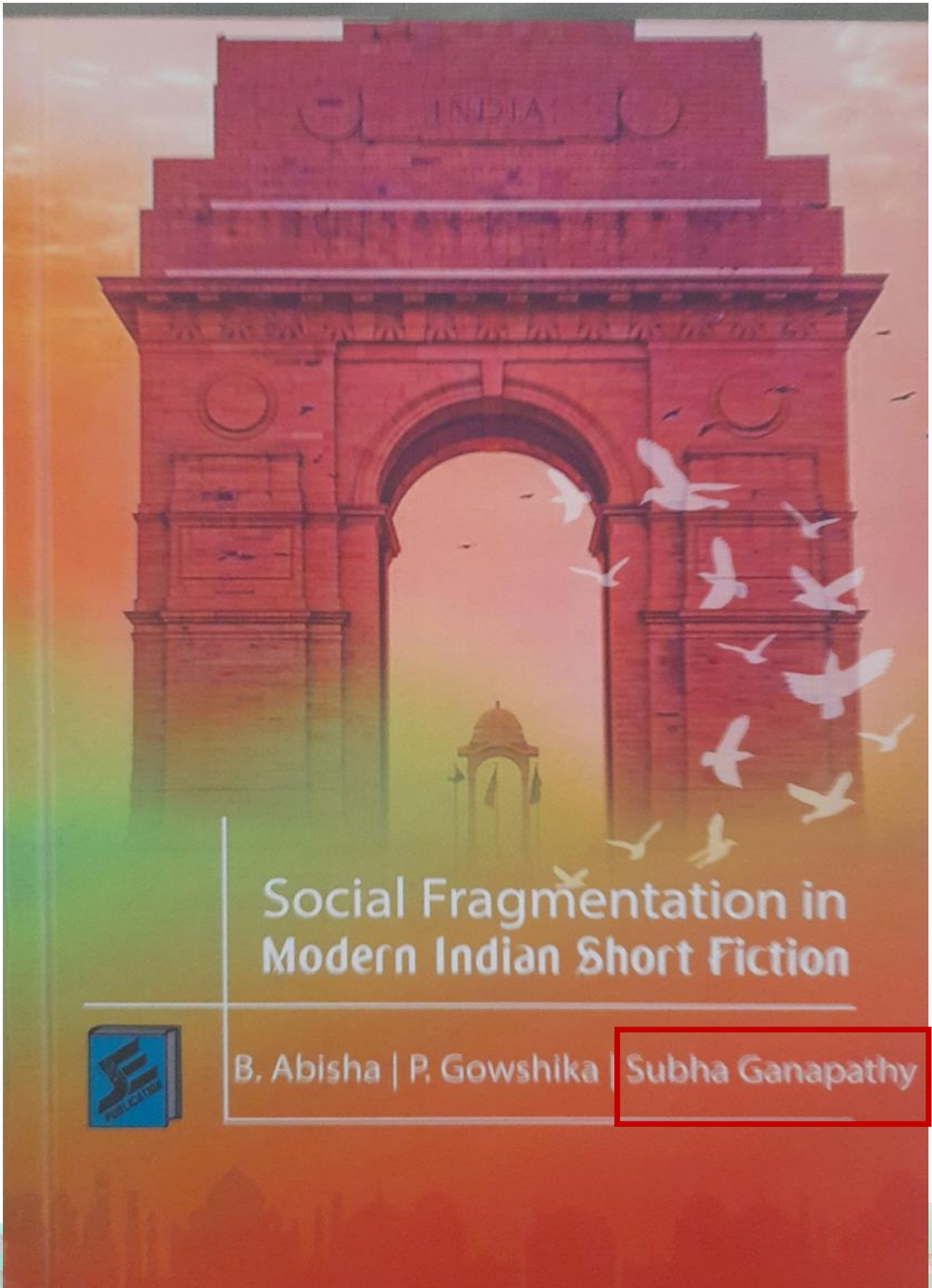
Preamble

Introduction

The study undertakes to prove how a subject could be rendered in two different genres by the same author and whether the translation of the two different genres would pose different issues.

The novels of the nineteenth century were written full of confidence and stability in British society. But the twentieth-century novels have changes like beliefs and political ideas after the events of the First World War and the disappearance of the British Empire. Twentieth-century novels most likely are, from modernism to postmodernism to the British society. Only twentieth-century novelists used formal techniques and procedures in their writing. Their writing is full of linguistic subjects relating to the texts, and the relationship between the social and cultural context. This change can be noticed from the works of twentieth century in two writers who are not so far from each other in terms of time.

August Wilson's novels portray the modern twentieth-century life and its problems. But in the novels of Wilson, he uses the traditional form. He has various kinds of characters in his novels, but they all belong to the middle-class social group. His stories are ironic and it expresses indirectly the moral judgments. His *Anglo Saxon Attitude* is about a historian's life



Social Fragmentation in
Modern Indian Short Fiction



B. Abisha | P. Gowshika | Subha Ganapathy

ABOUT THE BOOK

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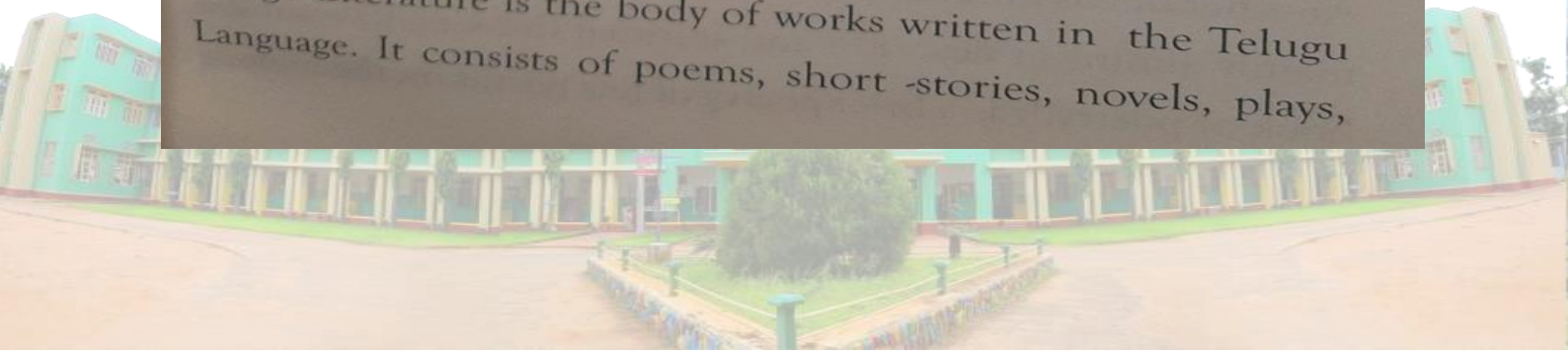
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INTRODUCTION



In South India literature has been written in four Dravidian languages which developed their own script and literature these are, Tamil, Telugu, Kannada, Malayalam. This is developed during the three Sangams period. The Sangam literature covers themes of war, love and politics to a great extent. Tolkappiyam and Ettutogai, Pattuppattu are essential works of these times. Thiruvalluvar is the most well-known creator of these cases who wrote Kural, which deals with many factors of existence and religion.

Telugu Literature is the body of works written in the Telugu Language. It consists of poems, short -stories, novels, plays,





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**Unveiling the Dichotomy of Jewish Tradition and Modernity
in *The Lost Shtetl* by Max Gross**

***¹Benitta G and ²Alby Grace**

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Holy Cross College (Autonomous), Nagercoil,

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Abstract

Tradition and modernity are dynamic forces that shape societies, belief systems and personal identities. Throughout history, societies have witnessed the interplay between tradition and modernity which serves as a microcosm for a broader global dilemma. The chapter entitled, “Unveiling the Dichotomy of Jewish Tradition and Modernity in *The Lost Shtetl* by Max Gross” investigates a dynamic interplay between tradition and modernity in *The Lost Shtetl* by Max Gross. Drawing upon the theoretical framework of New Historicism, this study examines how the novel explore the tensions arising from the clash between preserving traditional practices and the forces of modernization. Through a close reading of the narratives, this chapter highlights the authors’ nuanced portrayals of Jewish identity, cultural heritage and the complexities inherent in negotiating tradition and modernity.

Keywords: tradition, modernity, custom, heritage, identity, history

New Historicism or Cultural Poetics emerged in America in 1980s as a reaction towards the historical approach of the New Historicism. This literary theory was proposed by Stephen Greenblatt in the twentieth century and its main tenet is the interpretation of literature in terms of the milieu from which it emerged. New historicism insists on “the historicity of texts and the textuality of history” (Woolfreys 169). Colebrook argues that New Historicism studies the relation between text and history. New historicist believes that history is a matter of interpretation and not fact.

The Lost Shtetl, a captivating novel by Max Gross is set in the fictional town of Kreskol, a traditional Jewish Shtetl in Poland that has remained isolated from the rest of the world since the Holocaust. The Shtetl exists in a time capsule, untouched by modernity, encapsulating a microcosm of pre-World War II Eastern European Jewish life. The cultural fabric of Kreskol is steeped in Jewish traditions, customs and folklore.

The delicate balance of the Shtetl is disrupted when Yankel Lewinkopf, who left the village in search of Pesha Rosenthal Lindauer arrives back from Smolskie with Rajmund Sikorski and other officials. Yankel’s arrival exposes the Shtetl to the forces of modernity challenging its insulated existence. Yankel’s encounter with the outside world serves as a commentary on the clash between the insularity of the Shtetl and the rapidly changing global landscape. This exploration challenges the notion of a linear historical progression demonstrating that multiple historical layers coexist and interact within the narrative.

New historicism as advocated by Woolfreys emphasizes the historicity of texts suggesting that literary works are not isolated entities but products of their specific historical contexts. Furthermore, Woolfreys’ concept of the textuality of history asserts that history itself is constructed through texts. *The Lost Shtetl* presents an alternative history where the Shtetl remains hidden and unchanged providing a



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Wilderness and Humans: A study of the Palai landscape in Akananuru

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Abstract

The concept of wilderness as postulated by Deep Ecologists has been questioned by Guha. Stemming off this point, the present paper undertakes to consider the concept of wilderness as found in *Akananuru* as one of the Sangam works. This poetry anthology especially the Palai land poems are taken up for the study. While the prevalent concept of wilderness undergirds the enquiry the paper looks into the Palai poems to comprehend the human nature relationship in the early Tamil society

Keywords: Wilderness and Palai, wilderness in Akananuru

Tamil literature has its roots in the writings of authors and poets who emerged between the 6th and 12th centuries CE. During this period, Nayanmars (sages) and Alvars composed devotional poems dedicated to various deities. They received patronage from the Chola and Pandiya Kings, contributing to the growth of Tamil literature. Some of the most notable Tamil literary classics include *Kambaramayanam* by Kambar and *Periyapuranam* written by Sekkilhar.

The Sangam literature, which is an ancient Tamil literary tradition, consists of several important works. The *Ettuttokai* anthology, also known as the Eight Collections, and the *Pattupattu* anthology, also called the Ten Songs, are part of this tradition. Additionally, there are two prominent epics known as *Silappathikaram* and *Manimegalai*. The *Ettuttokai* anthology is comprised of the following eight collections: *Ainkurunuru*, *Akananuru*, *Purananuru*, *Kalittokai*, *Kurun tokai*, *Natrinai*, *Parpatal*, and *Patirrupattu*. Each collection offers a unique perspective on various themes and subjects.

The Sangam work *Akananuru* has been translated into English by Professor Dakshinamurthy Ayyaswami, allowing readers worldwide to access and appreciate its literary beauty and cultural significance. This translation contributes to the preservation and dissemination of Tamil literary heritage. Overall, Tamil literature showcases a rich tapestry of poems, epics, and anthologies, providing insights into the historical, cultural, and religious aspects of the Tamil people. *Akananuru* is a classical Tamil poetic work in Sangam Literature. It is otherwise known as *Netuntokai*, an anthology of long poems. *Akananuru* is one of the eight collections called *Ettuttokai*. The poems in this anthology are divided into five landscapes they are Palai division (arid landscape), Kurinci division (mountainous landscape), Mullai division (pastoral forests), Marutam division (riverine farmlands) and Neytal division (coastal landscape). Of these the Palai division is closest to the concept of 'Wilderness' as propounded by the Eco critics of the West. The 'wilderness' as uninhabited or untouched by humans is almost a misconception. As pointed out by MacFarlane and many other thinkers all landscape has been touched by humans at one point of time or another. This paper compares and contrasts the East West concepts of wilderness to showcase the difference in approach to nature in the two ideologies.

Values are like lightness; they are
signals giving us direction, meaning
and purpose
_Anonymous



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“The value of life is based on how long we live, but how much we contribute to others in our society”.

- BUDDA



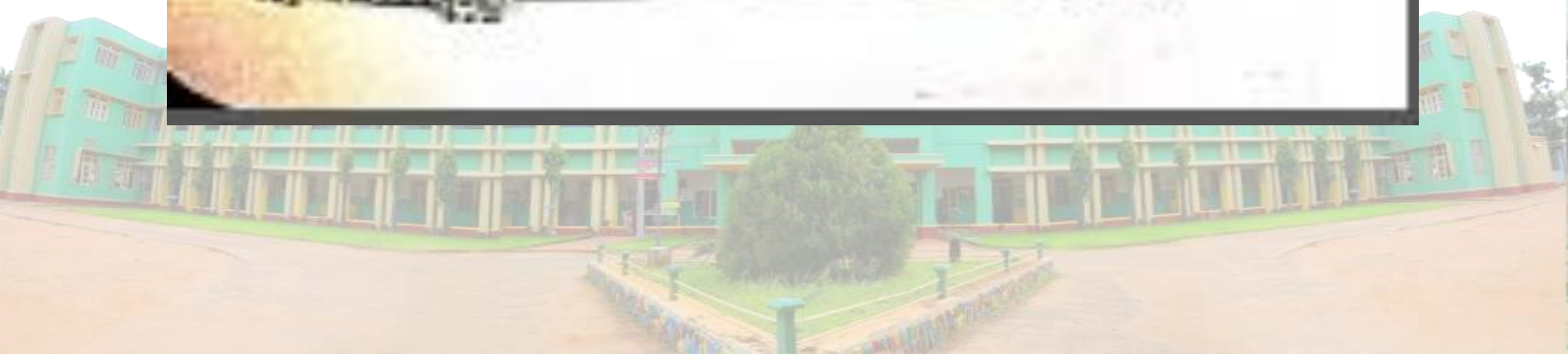
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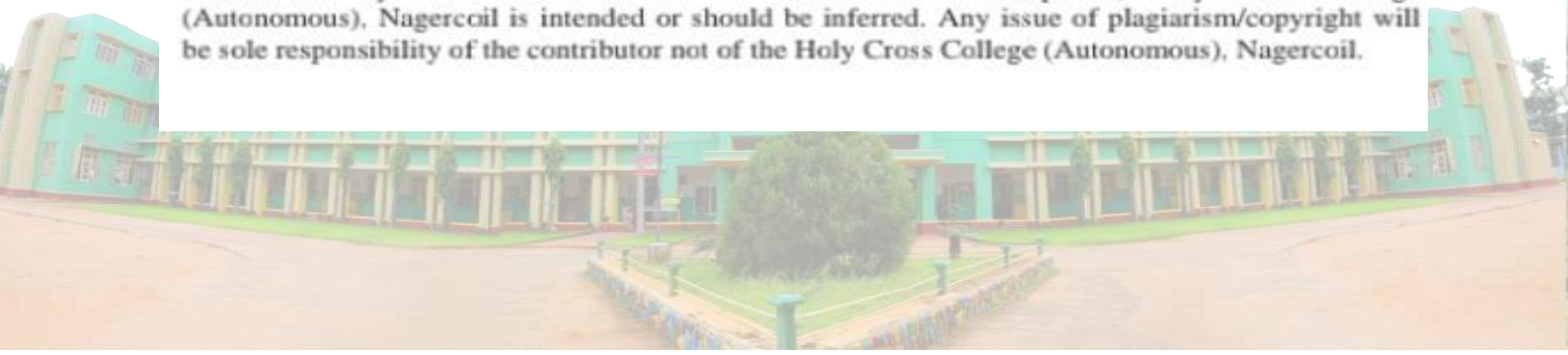
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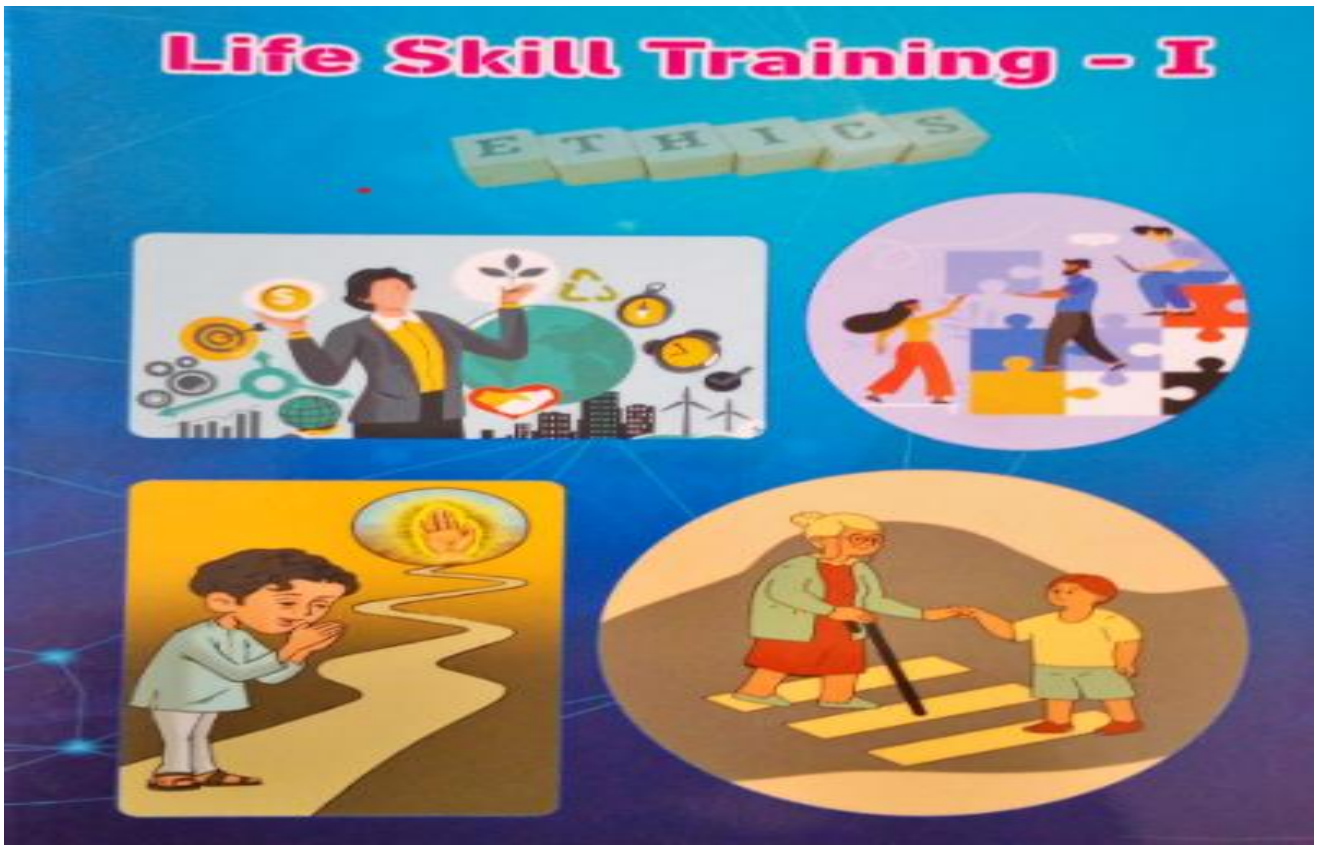
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Life Skill Training - I



Holy Cross College (Autonomous),
Nagercoil

Ms. M. Maria Helen Janobs

Dr. Selva Mary Gokila S. George

Dr. S. Sebastiammel

Ms. Selva Mary Prabha George

Values are like lightness; they are
signals giving us direction, meaning
and purpose
_Anonymous



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Life Skill Training - II



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Dr. S. Sebastianmal

Ms. Selva Mary Pralha George





“The value of life is based on how long we live, but how much we contribute to others in our society”.

- BUDDA



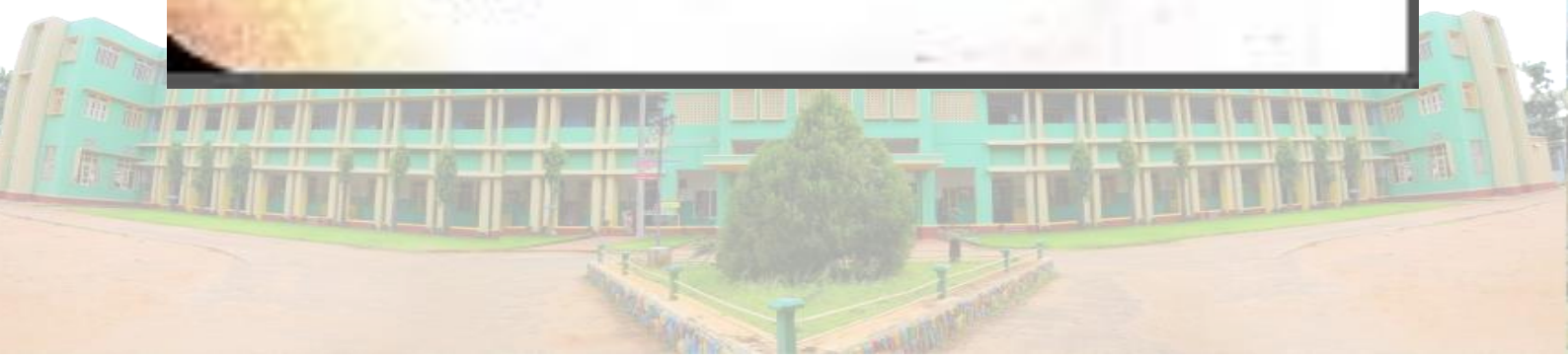
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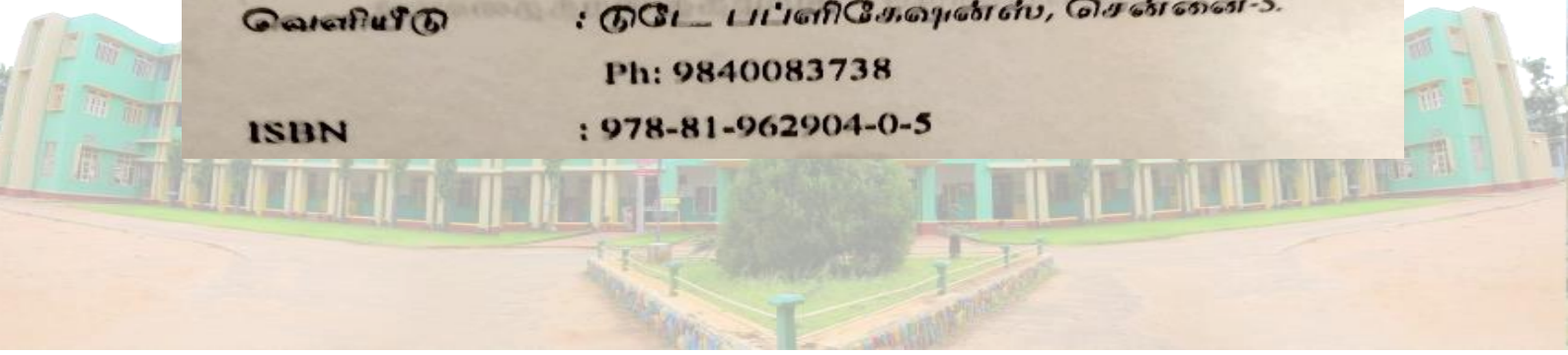
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முனைவர் செ. தேன்மொழி

உதவிப் பேராசிரியா, தமிழ்துறை,
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பெண்ணியக் கோட்பாடுகளுள் மிக முக்கியமான ஒன்று பழைய இலக்கியங்களை மறுவாசிப்புக்கு உட்படுத்துதலாகும். மறுவாசிப்பின் வாயிலாக அக்கால ஆணாதிக் மனோபாவத்தை வெளிக் கொணரலாம். சிலம்பில் பரத்தை என்று இகழப்பட்ட மாதவி இத்தகைய மறுவாசிப்புக் கோட்பாட்டால் கண்ணகிக்கு நிகராக மட்டுமன்றி பலராலும் கண்ணகிக்கும் மேலாகவே போற்றப்பட்டாள் என்பது தான் உண்மை. பெண்ணிய நோக்கிலான இம் மறுவாசிப்பு முறை கம்பனின் பெண்மாந்தர்களைப் பற்றிய வாசகரின் மனோபாவத்தை முற்றிலும் மாற்றியமைக்கும் தன்மையுடையது ஆகும். அதிலும் குறிப்பாக எதிர்மறை கதாபாத்திரமான கைகேயி எவ்வாறு புதிய கண்ணோட்டத்துடன் பார்க்கப்படுகின்றாள் என்பதையே இக்கட்டுரை முன்வைக்கின்றது.

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கொற்றவை பாலை நிலத்தில் புகழ் வாய்ந்த தெய்வமாகவும், அவளுடைய பார்வை அருள் சுரக்கும் பார்வையாகவும் உள்ளன. கொற்றவை எனும் சொல் வெற்றி தரும் தாயெனப் பொருள்படுகிறது. புறப்பொருள் வெண்பாமாலையிலுள்ள வெட்சிப்படலத்தில் கொற்றவை நிலைப் பற்றிக் கூறப்படுகிறது. தமிழ் இலக்கியப் பரப்பில் கொற்றவை எவ்வாறு அடையாளப்படுத்தப்பட்டுள்ளாள் என்பதை இலக்கண இலக்கியங்கள் வழி விளக்கமுறை ஆய்வாக ஆய்வுச் செய்யப்பட உள்ளன. மேலும் காலப் போக்கில் கொற்றவை எவ்வாறு பெயர் மாற்றம் செய்யப்பட்டுள்ளாள் என்பதும், தொல்குடி மக்களின் தாய்த் தெய்வ வழிபாடு பிற்காலத்தில் மாற்றம் பெற்ற விதமும் இவ்வாய்வுக் கட்டுரையில் ஆய்வுச் செய்யப்பட உள்ளன.

முன்னுரை

பண்டைய சமூகத்தில் கொற்றவை வழிபாடு தாய்த்தெய்வ வழிபாடாக இருந்துள்ளது. இயற்கையின் சக்தியாக இருக்கும் கொற்றவை வேறு எந்த சக்திக்கும் கட்டுப்படாதவளாக தனித்த ஒரு சக்தியாக பாலை நிலத்தெய்வமாகக் காணப்படுகிறாள். காளி, நீலி, சூலி, பைரவி, சாமுண்டி என்று வழக்காறாகக் கூறப்படும் இவள் எட்டுக்கரங்களைக் கொண்டு அளவிடற்கரிய சக்தி படைத்த தெய்வமாகக் காணப்படுகிறாள். மேலும் கொற்றவை பேய்ப் படையைத் தாங்கியவளாகவும், போர்க்களத் தெய்வமாகவும் முன்னிலைப் படுத்தப்படுகிறாள். தமிழிலக்கியத்திற்குத் தகுந்த இலக்கணம் வகுத்த தொல்காப்பியர், குறிஞ்சி, முல்லை, மருதம், நெய்தல் என்று நான்கு நிலத்திற்கும் தெய்வத்தைக் குறிப்பிட்டுள்ளார். ஐந்தாம் திணையான பாலைக்கு நிலம் கூறவில்லை. தொல்காப்பியர் கூறாமல் விட்டுச் சென்றதை லெப்பதிகாரத்தில் காணமுடிகிறது.

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தொகுதி - 1



இலக்குமிபுரம் கலை மற்றும் அறிவியல் கல்லூரி
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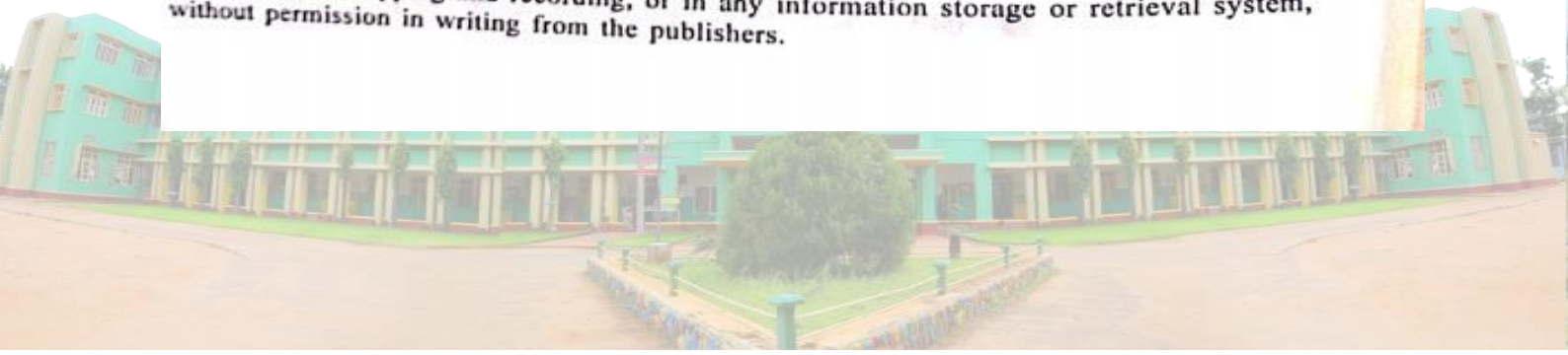
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முனைவர் மா.தே.அருண் மொழி நங்கை
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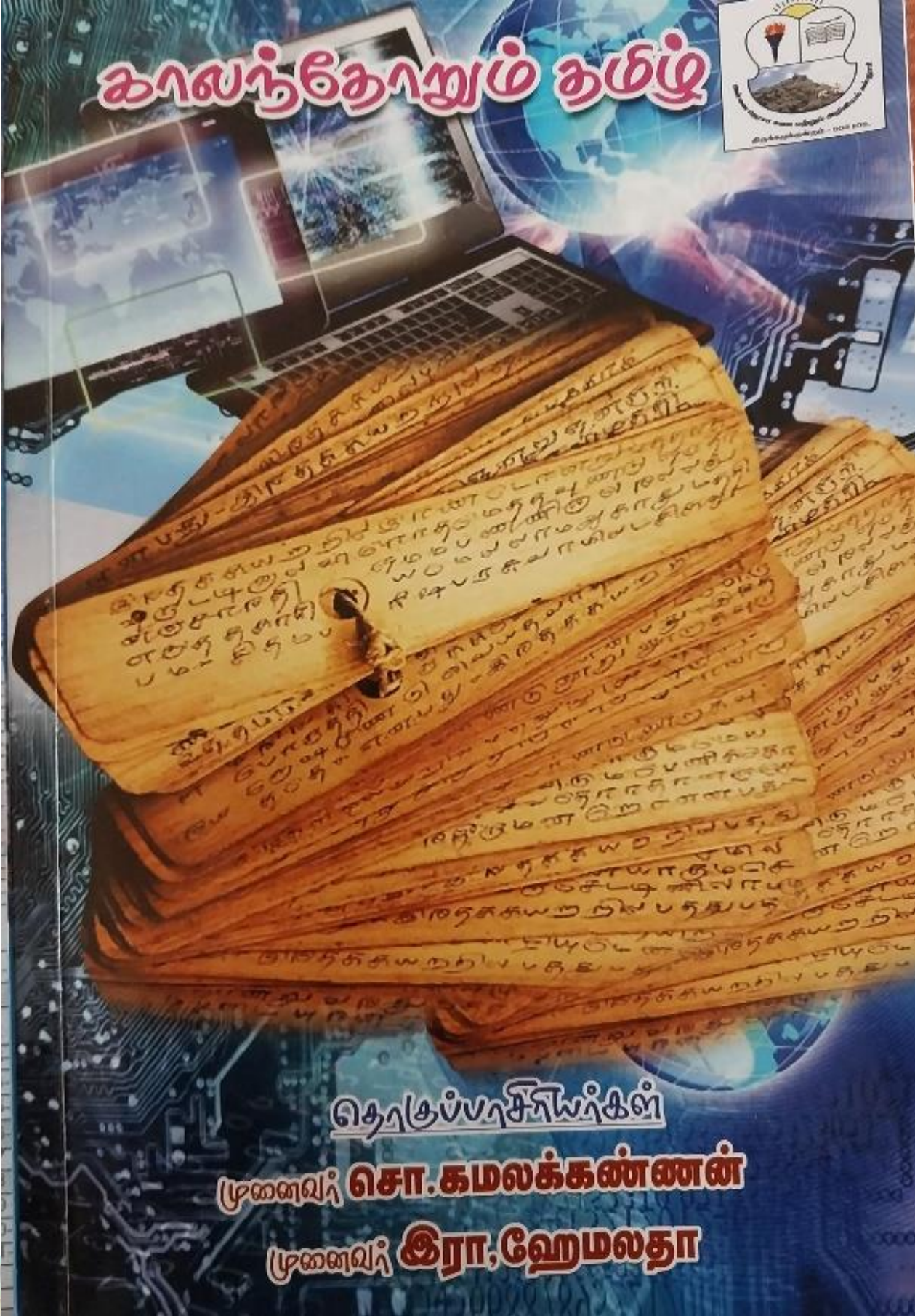
ஆய்வுச் சுருக்கம்

பாட்டுக்கொரு புலவன் பாரதி. 1882 ஆம் ஆண்டு டிசம்பர் 11ஆம் நாள் தோன்றினார். தன்னுடைய 11 வது வயதிலேயே பாரதி (கலைமகள்) என்னும் பட்டத்தை பெற்றார். 1897 ஆம் ஆண்டு அவருக்கு திருமணம் நடைபெற்றது. இளம் வயதிலேயே, பெற்றோரை இழந்தார். காசியில் உள்ள அத்நையின் ஆதரவில் படித்தார். அவர் காலத்தில் நடந்த விடுதலைப் போராட்டத்தில் பங்கேற்றார். புதுச்சேரியில் குடியேறினார். அங்கு தான் தன்னுடைய பெரும்பான்மையான கவிதைகளைப் பாடினார். 1921 ஆம் ஆண்டு செப்டம்பர் மாதம் பதினொன்றாம் நாள் சென்னையில் காலமானார். பாரதியாரின் தேசிய கீதங்களில் காணப்படும் தேசிய ஒருமைப்பாடு பற்றி இக்கட்டுரையில் காணலாம். மனிதர்கள் ஜாதி மதம் என்று பாகுபாடு பார்த்து பிரிந்திருக்கும் அவலத்தை பாரதியார் கண்டிக்கின்றார் மனிதர்கள் அனைவரும் ஒன்றே, அவர்களுக்குள் வேற்றுமை காண்பது நல்லதன்று. அனைவரும் ஒற்றுமையுடன் வாழ வேண்டும் என்று வலியுறுத்துகின்றார். ஒற்றுமையினால் உயர்வு ஏற்படும் என்பதை நாட்டு மக்களிடம் பரப்பும் விதமாக இப்பாடல்களைப் பாடியுள்ளார்.

“தொழுதுனை வாழ்த்தி வணங்குவதற்கு இங்கு உன்
தொண்டர் பல்லாயிரர் சூழ்ந்து நிற்கின்றோம்” (தே.கீ.:11)

பாரதமாதாவை நாட்டு மக்கள் அனைவரும் வாழ்த்தி வணங்க வேண்டுமென்று விரும்புகின்றார். தாய் நாட்டுக்கொடிக்கும் புனிதத் தன்மை உண்டு. அதிலும் சமய ஒற்றுமையை வலியுறுத்துகின்றார். இவ்வாறு அவருடைய தேசிய ஒருமைப்பாட்டு சிந்தனையை கட்டுரையில் ஆய்வு நோக்கில் எழுதியுள்ளேன்.





காலஞ்சோறும் கருத்து



தொகுப்பாசிரியர்கள்

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வாழ்வியல் இலக்கணம் வகுத்த வள்ளுவம்

[ஆய்வுக் கட்டுரைத் தொகுப்பு]

தொகுப்பாசிரியர்
உடையாரீகாயில் குணா

பதிப்பாசிரியர்கள்

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மு.அப்பாவு

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தஞ்சாவூர். தமிழ்த்தாய் அறக்கட்டளை ஏற்பாட்டில், திருநெல்வேலியில் செப்டம்பர் 22, 23, 24ஆம் தேதிகளில், லிட்டில் பிளவர் மேல்நிலைப் பள்ளியின் திருவள்ளுவர் கலையரங்கத்தில் நடத்த உள்ள உலகத் திருக்குறள் ஐந்தாவது மாநாட்டிற்கு, எனது மனம் நிறைந்த வாழ்த்துகளைத் தெரிவித்துக் கொள்கிறேன்.

“பிறப்பொக்கும் எல்லா உயிர்க்கும்” என்ற உன்னத தத்துவத்தை உலகுக்கு எடுத்துரைத்த திருக்குறள் நூல், அனைத்துத் தரப்பு மக்களுக்கும் சிறந்த வழிகாட்டியாக விளங்குகிறது. திருக்குறளை நமது தேசிய நூலாக அறிவிக்க வேண்டும் என்றும், உலகப் பொதுமறையாக அறிவிக்க வேண்டும் என்றும் வலியுறுத்தி, தஞ்சாவூர், தமிழ்த்தாய் அறக்கட்டளை பல்வேறு அமைப்புகளுடன் இணைந்து, உலகத் திருக்குறள் மாநாடுகளை 2019 ஆம் ஆண்டு முதல் நடத்தி வருகிறது.

இந்த மாநாட்டை ஒட்டி, திருவள்ளுவர் சிலை அமைப்பதும், பன்னாட்டுக் கருத்தரங்கம் நடத்துவதும், ஆய்வுத் தொகுதிகள் வெளியிடுவதும், சாதனையாளர்களுக்கு விருது வழங்குதலும் சிறப்பாகும். இந்த மாநாடு வெற்றி பெற வாழ்த்துகளைத் தெரிவித்துக் கொள்கிறேன்.

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அறவழி காட்டும் வள்ளுவம்

ஆய்வாளர்

முனைவர் செ. சனிதா

உதவிப்பேராசிரியர்
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நாகர்கோவில்

முன்னுரை

திருக்குறள் நாடு, மொழி, இனம், சமயம் அனைத்தும் கடந்த நிலையில் மானுட இனத்தின் நலன்களை மட்டுமே கருத்தில் கொண்டு வள்ளுவரால் இந்நூல் படைக்கப் பட்டுள்ளது. நீதிநூல்களில் காலத்தால் முற்பட்டதும், பொருட்சிறப்பால் உயர்ந்ததுமாகத் திகழ்வது திருக்குறளே. இதன்காலம் பற்றி பல்வேறு கருத்துக்கள் நிலவுகின்றன. வாழ்க்கைக் கோட்பாடான அறம், பொருள், இன்பம், வீடு என்ற நான்கில் முதல் மூன்றில் முறையாக வாழ்ந்தால் வீடுபேறு தானாகக் கிடைக்கும் என்ற கோட்பாட்டில் திருவள்ளுவர் குறள் வெண்பாவில் ஆயிரத்து முந்நூற்று முப்பது (1330) குறட்பாக்களை இயற்றியுள்ளார் வள்ளுவர் அறத்தால் கிடைக்கும் நன்மையும் உழைப்பால் கிடைக்கும் பொருளையும், அதனை அனுபவிக்க கூடிய இன்பத்தையும் தொகுத்து நமக்குத் தந்துள்ளாரார்.

அறவழி காட்டும் வள்ளுவம்

திருவள்ளுவர் இரண்டாயிரம் ஆண்டுகளுக்கு முன்பே பல அரிய தனிமனித, குடும்பவியல் கோட்பாடுகளை

தற்காலத் தமிழ்க் கவிதைகள்

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முனைவர் பா. சுரேஷ் டீனியல்

முனைவர் ந.அ. அருணாசிரி

முனைவர் ஜா. ஜினிலா

புரவர்கள் :

முனைவர் தா. நீலகண்டபிள்ளை

முனைவர் தா.எ. ஐசக் சாமுவேல் நாயகம்

கல்லூரி ஆசிரியர் குமரித் தமிழ்ச் சங்கம்





ஸ்காட் கிறிஸ்தவக் கல்லூரி (தன்னாட்சி), நாகர்கோவில்



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மாறும் முக வரிகளின் மாறா அக வலிகள்

முனைவர் **வ. ஆன்றனி பிரகாஷ் பபிலா**

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தமிழ்த்துறை

ஹோலிகிராஸ் கல்லூரி (தன்னாட்சி), நாகர்கோவில்.

முன்னுரை

காலந்தோறும் இலக்கியங்கள் சமகால மக்களின் எண்ணங்களை, ஒழுக்கங்களைத் தேவைகளை அறிவாகவும், அறிவுறுத்தலாகவும் கருக்கொண்டு உருக்கொண்டு உலவிவரும். அதுவுமன்றி முந்தைய வரலாறுகளின் எச்சங்களாகவும், புராண இதிகாசங்களான புனைவுகளின் தொடர் புள்ளிகளாகவும் தொடர்ந்து நிற்கும். பாரதி மகாகவியாக வலம் வர பாரதி வாழ்ந்த காலத்தின் தேவையான பாரத விடுதலை பெருங்காரணமாக அமைந்தது. புதுக்கவிதை என்றாலே ஏதாவது ஒன்றை தன்னுள் பதுக்கி வைத்திருக்கும். அரசியல் விடுதலை நிகழ்ந்தபோதும் சமூக விடுதலை இன்னும் இந்தியாவில் குறிப்பிடத்தகுந்த அளவு நிகழவில்லை என்பது விளிம்பு நிலையினரின் கருத்தியலாக அமைகிறது. 'மாறும் முக வரிகள்' எனும் கவிதைத்தொகுப்பு வாழ்க்கையின் முரண்கள், இருண்மை, குடும்ப உறவுகளின் சிக்கல், பொருளாதார சிக்கல்கள், இதிகாச செய்திகள், கிறிஸ்துவின் நிகழ்வுகள் என்பன போன்ற சிந்தனைகளின் கருவாகி நிற்கின்றன. கவிதைகளைக் கண்ணோக்கும் படிப்பாளர்களை இல்லத்துக்கும் இதயத்துக்குமாக இயங்க வைக்கிறது.

மாறும் முகவரிகள்

கவிஞர் ரமணன் அவர்களின் இரண்டாவது கவிதைத் தொகுப்பு மாறும் முகவரிகள். குடும்ப உறவுகளில் முதன்மையானது 'அம்மா'. அம்மாவின் அன்பு, இரக்கம் குடும்பம் என்னும் கோவிலைத் தெய்வம் உறையும் கோவிலாக மாற்றிவிடும். அம்மா இல்லாத குடும்பம் தெய்வம் இல்லாத கோவில். கவிஞரின் அம்மா, அப்பாவிக்குழந்தைகளின் தாய். எனவேதான்,

'அப்பாவைப் போலவே
குழந்தைகள்; ஆனால்

திருக்குறளே தேசிய நூல்

(பன்னாட்டுக் கருத்தரங்க ஆய்வுக் கட்டுரைகள்)



தொகுப்பாசிரியர்
உடையார்கோயில் குணா

பதிப்பாசிரியர்கள்
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உதவிப் பேராசிரியர் ந.சுமதி

தில்லியில் திருக்குறள் முழுக்க மாநாடு - 2023

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திருக்குறள் முற்றோதல்

இந்தியத் தலைநகர் புதுதில்லியில் இந்தியா கேட் முதல் நாடாளுமன்றம் வரை
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யமுனைக் கரையில் காவிரிக் கவிஞர்கள்



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திருக்குறளில் அகவாழ்க்கை

முனைவர் செ. சுனிதா,

உதவிப் பேராசிரியர்,
தமிழ்த்துறை, திருச்சிலுவைக்
கல்லூரி, (தன்னாட்சி) நாகர்கோவில்.

முன்னுரை:

அறம், பொருள், இன்பம், வீடு ஆகிய நான்கு உறுதிப் பொருள்களை உணர்த்தவே இலக்கியங்கள் உருவாகின்றன. சங்க இலக்கியங்களில் அறக் கருத்துக்களைக் கூறும் பல தனிப்பாடல்கள் காணப்படுகின்றன. சங்கம் மருவிய காலத்தில் தனிநூலாக அறநூல்கள் உருவாகத் தொடங்கின. அவை மக்கள் வாழ்வில் மேற்கொள்ள வேண்டிய அறக் கருத்துகளை மட்டுமே முழுமையாக உணர்த்தும் நூல்களாகக் கருதப்பட்டன. பதினெண்கீழ்க்கணக்கு நூல்களில் பதினொரு நூல்கள் அறம் கூறும் நூல்களாக அமைந்துள்ளன. மனித சமுதாய நலத்திற்கும் மேம்பாட்டிற்கும் அருமருந்தாக விளங்கும் திருக்குறளின் அகவாழ்க்கை குறித்த அறக்கருத்துகள் இக்கட்டுரையில் பதிவு செய்யப்பட்டுள்ளன.

ஐம்பொறிகள்:

நமது உடலில் ஐம்பொறிகள் உள்ளன. அவை நுகர்வுக்காக விழைகின்றன. கண், காது, மூக்கு, வாய், மெய் என்று ஐந்து நிலைகளில் நுகர்வை நோக்கிச் செல்கின்றன. இந்த ஐந்திலும் கண்ணும் காதும் மிகவும் பாதிப்பை ஏற்படுத்தக் கூடியவை. இவைகளின் கட்டுப்பாட்டைப் பற்றி திருவள்ளுவர்

மனிதமும் மதிப்பீடுகளும்



மனிதமும் மதிப்பீடுகளும்



ஹோலிகிறாஸ் கல்லூரி (தன்னாட்சி)
நாகர்கோவில்

நூல் உருவாக்கம்

முனைவர் J.M. வினிதா சார்லஸ்
முனைவர் M. ஜஸ்டின் பிழூலா
முனைவர் S. கனிதா
முனைவர் S. எம்.என். பாய்



இமைகள் முழுக்க இலட்சியம் இருந்தால்
சுமைகள் கூட சுகமான சுமைதான்
மனதில் உனக்கு எதற்கு பாரம்?
தொடுவானம் கூட தொட்டுவிடும் தூரம்
சுயத்தை இழந்து பறக்கும் மனிதா!
மனதை சற்றுத் திருப்பிப் பார்
மறந்துபோன மதிப்பீடுகளை திரும்பிப் பார்
மண்ணில் இன்றே மகத்துவம் காண்பாய்!
உடலின் வளர்ச்சிக்கு உணவிடும் மனிதா!
உயர்ந்த விழுமியங்களால்
உணர்வுக்கும் உணவிடு!
உயர்ந்த உனக்குள் இருக்கு!
உலகை இன்றே வெற்றியால் நிரப்பு.

- Dr. J.M. Vinitha Charles







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தமிழ் இலக்கண இலக்கியங்களில் கொற்றவை அடையாளங்கள்

முனைவர் செ.சுனிதா,

உதவிப் பேராசிரியர்,
தமிழ்த்துறை, தோல்கிராஸ் கல்லூரி,
நாகர்கோவில்.

ஆய்வுச்சுருக்கம்:

கொற்றவை பாலை நிலத்தில் புகழ் வாய்ந்த தெய்வமாகவும், அவளுடைய பார்வை அருள் அரக்கும் பார்வையாகவும் உள்ளன. கொற்றவை எனும் சொல் வெற்றிதரும் தாயெனப் பொருள்படுகிறது. புறப்பொருள் வெண்பாமாலைப்பிழைள்ள வெட்சிப்படலத்தில் கொற்றவை நிலைப்பற்றிக் கூறப்படுகிறது. தமிழ் இலக்கியப் பரப்பில் கொற்றவை எவ்வாறு அடையாளப்படுத்தப்பட்டுள்ளன என்பதை இலக்கண இலக்கியங்கள் வழி விளக்கமுறை ஆய்வாக ஆய்வுச் செய்யப்பட உள்ளன. மேலும் காலப் போக்கில் கொற்றவை எவ்வாறு பெயர் மாற்றம் செய்யப்பட்டுள்ளன என்பதும், தொல்குடிமக்களின் நாய்த்தெய்வவழிபாடு பிற்காலத்தில் மாற்றம் பெற்றவீதமும் இவ்வாய்வுக் கட்டுரையில் ஆய்வுச் செய்யப்பட உள்ளன.

கொற்றவையை வழிபட்டுகையில் காப்பூசலைக் கட்டிக் கொண்டால் மனத்துயரம் நீங்கும். அதோடு பிரிந்து சென்ற தலைவனையும் விரைந்துவரச் செய்வான் என்ற குறிப்பு இடம் பெற்றுள்ளது. மேலும் கொற்றவை எந்த வடிவத்தில் இருப்பாள் என்பதைப் பரிபாடல் விளக்குகிறது.

"நான்கு வீழி படைத்தாள் என்று
நெற்றி வீழியாநிறை திலகம் இட்டாளே
கொற்றவை கோலம் கொண்டுள் பென்
பவளவளை செறித்தாட் கண்டு அணிந்தாள் பச்சைக்
குவளைபகந்தண்டு கொண்டு
கல்லகாரப் பூவால் கண்ணி தொடுத்தானை நில்லாகி"

(பரிபாடல் 98 -101)

அபிரைமலையில் குடிகொண்டிருக்கும் கொற்றவையைக் குறிப்பிடும்போது

"அணங்குடைமரபின் கட்டில்மேல் இருந்து
தும்பைசான்றமேய் தயங்குஉயக்கத்து
நிறம் படுகுருதிபுறம்படிள் அல்லது
மடைஎதிர் கெள்ளாஅஞ்சுவருமரபின்
கடவுள் அயிரையின் நிலை."

(பதிற்றுப்பத்து - 79)

இரத்தத்தை மட்டுமே பலியாகப் பெறுபவள், பிறபொருளை ஏற்றுக்கொள்ளாத அச்சம் தருகின்ற முறைமையை உடையவளாகப் பதிற்றுப்பத்தில் காணப்படுகிறாள். அத்தகைய அபிரை மலைக் கொற்றவையை இளஞ்சேரல் இரும்பொறை வழிபட்டபோது இரத்தம் கலந்த சோற்றுப் பிண்டங்களை வைத்து வழிபட்டசெய்தியையும் பதிற்றுப்பத்தில் காணமுடிகிறது. அபிரைமலையில் உறையும் கொற்றவை குறித்த பதிவுகளைப் பதிற்றுப்பத்தில் மட்டுமே காணமுடிகிறது.

பத்துப்பாட்டு நூல்களில் முதலாவதாக இடம்பெறுகிற திருமுருகாற்றுப்படையின் பாட்டுடைத்தலைவனான முருகப்பெருமானின் தாயாக கொற்றவையைக் குறிப்பிடுகிறார் நக்கீரர். தமிழ்க்கடவுள் முருகன் யாருடைய மகன் என்று குறிப்பிடும்போது நக்கீரர் பயன்படுத்தும் மூன்று சொற்றொடர்கள் மிகவும் முக்கியமானதாகும். அவை பழையோள், கொற்றவை, மலைமகள் என்று மூன்று பெயர்களும் மூன்று வெவ்வேறு காலக்கட்டத்தில் உருவாகிய தொல்குடி சமூகத்தின் அடையாளங்கள்.

"மலைமகள் மகனேமாற்றோர் கூற்றே
வெற்றிவெல்போர்க் கொற்றவைச் சிறுவ
கீழையணிசிறப்பின் பழையோள் குழவி"

திருமுருகாற்றுப்படை 256-259)

மக்களின் அன்றாட இறை வழிபாட்டு நம்பிக்கையில் தாய்த்தெய்வ அடையாளமாக விளங்குகின்ற "கொற்றவை"வழிபாடு நிகழ்காலத்தில் சக்தி வழிபாடாகமாற்றம் பெற்றுள்ளது.

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பெரியந்தமிழ்க் காவலன்

யாரதி

(பன்னாட்டுக் கருத்தரங்கக் கட்டுரைகள்-2023)



- ◆ பாரதியும் தமிழும்
- ◆ பாரதியும் தேசியமும்
- ◆ பாரதியும் பெண்ணியமும்
- ◆ பாரதியும் சமத்துவமும்
- ◆ பாரதியும் தொலைநோக்குச் சிந்தனையும்



எழுச்சிக்கனி க.சரவணன்

யோகி பதிப்பகம்

நூலாசிரியர் குறிப்பு:



இயற்பெயர்: க. சரவணன்
புனைப் பெயர்: எழுச்சிக்கவி, புதுவை சரவணன்
தந்தை: நா. கண்ணையன் **தாய்:** க. கிராஜாமணி
மனைவி: ச. சரசுவதி **மகன்:** ச. யோகேசுவரன்
பிறந்த நாள்: 17.07.1975
கல்வி: கிளங்கலை (சுற்றுலா)

முதுகலை, இளமுனைவர் (பொது நிர்வாகம்)
 மதிப்புறு முனைவர்: இலக்கியம், மனித உரிமைகள் மற்றும் சமூகம்.
பணி: சுற்றுலா வழிகாட்டி.

சமூகப்பணி: குருதி கொடையாளர், இயற்கை மற்றும் சுற்றுச்சூழல் ஆர்வலர்,
 மனித உரிமை மற்றும் சமூக ஆர்வலர்.

தமிழ்ப்பணி: கவிஞர், எழுத்தாளர், உகை சாதனையாளர், ஆய்வு கட்டுரையாளர்,
 தொகுப்பாசிரியர், பதிப்பாசிரியர், பத்திரிக்கையாளர். பட்டிமன்ற பேச்சாளர்.

நூல்கள்: ஆசிரியராக: 1. எழுக தமிழா 2. காதத்தை வென்ற கலாம் 3. ஆறாம் வீரல்.
 தொகுப்பாசிரியராக: 21 நூல்கள் பதிப்பாசிரியராக: 14 நூல்கள் மற்றும்
 இவரது படைப்புகள் கிட்டம் பெற்றுள்ள தொகுப்பு நூல்கள் 100க்கும் மேல்.

நிறுவநர்/தலைவர்: திருவள்ளூர் உகை சாதனையாளர் அமைப்பு,
 அனைத்துகை அருந்தமிழ்ச் சங்கம், புதுச்சேரி, இந்தியா.

வாழ்நாள் உறுப்பினர் - புதுவைத் தமிழ்ச் சங்கம்,

அனைத்திந்தியத் தமிழ் எழுத்தாளர்கள் சங்கம்,

**உறுப்பினர் - உகைத் தமிழ்ச் சங்கம் மதுரை மற்றும் 10க்கும் மேலான
 தமிழ் அமைப்புகள்.**

துணைத்தலைவர் - கனடா தமிழாழிப் பேரவை

State Secretary: International Human Rights Ambassadors Organization.

இணை ஒருங்கிணைப்பாளர் - புதுச்சேரி (TNP&MRU)

**திருக்குறள் தூதர், சர்வதேச அமைதி மற்றும் மனித உரிமைகள் தூதர் ஆகிய
 பொறுப்புகளை வகித்து வருகிறார்.**

எழுச்சிக்கவி, தமிழ்ச்சுடர், தமிழ்ப்பணிச் செம்மல், இலக்கியச் செம்மல்,
 கவிச்செம்மல், கவிமாமணி, திருக்குறள் சீர் பரவுவார், குறள் பணிச்செம்மல்,
 அருந்தமிழ் அரசு, கலை இலக்கிய சேவை ரத்னா, சமூகச் செம்மல்,
 சாதனைச் செம்மல் உள்ளிட்ட 176 விருதுகள், 60 வெற்றி பரிசுகள்,
 41 உகை சாதனை சான்றிதழ்கள் 100 க்கும் மேலான அரசு மற்றும் அரசு
 சார்பு நிறுவனங்கள், கல்லூரி மற்றும் பல்கலைக் கழக பாராட்டுச்
 சான்றிதழ்கள், 1000க்கும் மேலான இலக்கிய மற்றும் சமூக அமைப்புகளின்
 பங்கேற்பு சான்றிதழ்கள், மற்றும் 200க்கும் மேலான சர்வதேசப்
 பாராட்டுச் சான்றிதழ்களும், பெற்றுள்ளார்.

1990ல் தனது மாணவப் பருவத்தில் துவங்கி இன்று வரை மக்கள்
 நலன், மொழிநலன், தொழிலாளர் நலன், அரசியல் மற்றும் சமூக, இன
 விடியலுக்காக துணிந்து, தொடர்ந்து களப்பணியாற்றி வருகிறார். இதனை,
 அவரது பகுதி மக்களும், அரசியல் மற்றும் முக்கிய பிரமுகர்களும் நன்கு அறிவர்.
 இவரது இப்பயணமானது, சமூகத்தின் குரலாகவும் தமிழின
 முரசாகவும் தனது எழுச்சிமிகு படைப்புகளால் இன்றும் தொடர்ந்து
 கொண்டிருக்கிது என்பதற்கு, இந்நூல் ஓர் சான்றாகும்.

வெளியீடு:



யோகி பதிப்பகம்

(G.O.L Regn.No.UDYAM - PY. 03 - 0001483)

புதுச்சேரி, இந்தியா



தெய்வ ஜெயா

பைந்தமிழ்க் காவலன் பாரதி...

53. முதுமுனைவர் மு. தெய்வேந்திரன்,
கோபிசெட்டிபாளையம் - பாரதியின் நடிப்பு கதேசிகள்
54. பொ.பரமேஸ்வரி, ஈரோடு
- பாரதியும் பெண்ணியமும்
55. ப.கோ.பாரதமணி, கொடைக்கானல்
- பாரதியும் பெண்ணியமும்
56. முனைவர் பாரதி கோவிந்தம்மாள், புதுச்சேரி
- பாரதியும் பெண்ணியமும்
57. பா.அஜித்குமார், ராணிப்பேட்டை மாவட்டம்
- பாரதியும் தமிழும்
58. ம. பூபாலன், பல்லடம்
- பாரதியும் பெண்ணியமும்
59. முனைவர் கோ. செந்தில் செல்வி, வேலூர்
- பாரதியின் பெண்ணிய சிந்தனை
60. ப.ராஜாராம், செய்யாறு,
- பாரதியும் சமத்துவமும்
61. முனைவர் த.சுமதி, மதுரை
- பாரதியின் பரந்த பார்வை.
62. முனைவர் பி. கார்த்திகா, மதுரை.
- பாரதியும் தொலைநோக்கு சிந்தனையும்
63. செ.பேச்சியம்மாள், சேலம்.
- பாரதியும் தேசியமும்
64. எம்.ஜி. ஆறுமுகம், சொரக்காயப்பேட்டை
- பாரதியும் சமத்துவமும்
65. முனைவர் செ.ஐடா, நாகர்கோவில்.
- பாரதியும் தொலைநோக்குச் சிந்தனையும்
66. அ. நித்யா, ஆரோவில்.
- பாரதியும் தமிழும்.
67. முனைவர் க. அகல்யா, திருச்சிராப்பள்ளி
- பாரதியும் ஆன்மீகமும்
68. கு.திலகவதி, கோவை
- பாரதியின் சுயசரிதையில் தொலை நோக்குப் பார்வை
69. அ.கனகவள்ளி, காரைக்கால்
- பாரதியும் தேசியமும்
70. திருமதி ரெ.விஜயசித்ரா, சேலம்மாவட்டம்.
- பாரதியும் சமத்துமும்

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பெரும்புலியார் காவலன் பாரதி ..

முனைவர் செ.ஐடா,

உதவிபேராசிரியை,

தமிழ்த்துறை (சுயநிதி பிரிவு)

ஹோலிகிராஸ்கல்லூரி,

நாகர்கோவில்.

பாரதியும் தொலைநோக்குச் சிந்தனையும்
முன்னுரை

பன்முகங்களின் படைப்பில் உருவான உலகில் பலவகைத் தேடல்களும் ஊடல்களும் முன்னோக்கிச் செல்கையில் ஏதோ ஒன்றையே கருவாகவும் உருவாகவும் கொண்டு படைப்புகளை படைத்தளிப்பதோடு அந்தப் பார்வையிலேயே பாதையையும் அமைக்கின்றனர். அதனையே சமூகத்திற்கும் கொடுக்கின்றனர். ஆனால் இதிலிருந்து மாறுபட்டு தன் சிந்தையை விசாலமாக்கி பல்துறைகளிலும் பலவகையிலும் தன் கண்ணோட்டத்தைப் பதித்ததோடு தொலைநோக்குச் சிந்தனை உடையவராய் அதை மாந்தர் மத்தியில் எடுத்துச் சென்று பரவ விட்டுப் படரச் செய்தவர் மகாகவி சுப்பிரமணிய பாரதியார். அவரின் தொலைநோக்குச் சிந்தனையை விளக்குவதாக இக்கட்டுரை அமைகிறது.

பாரதி

தன்னுணர்வை விண்ணுயர கொக்கரித்து மக்களை விழிப்படைய வைத்த பாரதி தமிழ்மண்ணின் சொத்து என்று நினைக்கும் போது மிக உயர்வான மகிழ்வு. தமிழ், தமிழர் வாழ்வு, விடுலை உணர்வு, பெண்விடுதலை என தொலைநோக்குச் சிந்தனை உடைய பாரதி சுப்பிரமணியன் என்னும் இயற்பெயர் கொண்டவர். இவருடைய கவித் திறனுக்காகவே பாரதி என்ற பட்டம் வழங்கப்பட்டது.

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கல்வியே மருந்து இலக்கியங்களின் வழி ஆன்றோர்களின் சான்று

முனைவர் சா.டெய்சி

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முன்னுரை

இவ்வுலகில் மனிதன் தான் பெறுகின்ற அறிவு, அனுபவம் ஆற்றல் போன்றவற்றை அடுத்த தலைமுறைக்கு கற்றுக் கொடுப்பதே கல்வி. இவ்வாறு நாம் பெறுகின்ற கல்வி நம் ஆளுமைக்கும், ஆற்றலுக்கும் அடித்தளமாக இருந்து நம் செயலினைச் சிறப்படையச் செய்ய வழிவகுக்கும். கலப்பை என்பது கல் என்னும் அடிச் சொல்லில்பிறந்தது கலப்பையின் பணி நிலத்தை அகழ்தல் அல்லது தோண்டுதல். அதேபோல் கல்வி என்னும் சொல்லுக்குக் கல்லுதல் மற்றும் தோண்டுதல் என்றும் பொருள் உண்டு. கலப்பை நிலத்தைத் தோண்டிப் பண்படுத்துதல் போன்று கல்வி (கல்லுதல்) தம் மனத்தைக் கிளறி நம் ஆன்மாவைப் பண்படுத்துகிறது.

“புத்தகம் இல்லாத வீடு
ஜன்னல் இல்லாத அறை போன்றது
எந்த வீட்டில் நூல்கள் இருக்கிறதோ
அந்த வீட்டில் ஆன்மா இருக்கிறது”

என்று அறிஞர் பிளேட்டோ அழகாகக் கூறுவார். பலநூறு ஆண்டுகளுக்கு முன்பு மக்கள், கற்றவர்களைத் தேடிச் சென்று கல்விக் கற்று தங்களை உயர்த்திக் கொண்டார்கள். அறிவு நுட்பத்தின் அடித்தளமாக இருந்த கல்வி இன்றைய சூழலில் நிலை மாறி பொருளீட்டுகிற வாணிகத்திற்கானப் படிக்கட்டுகளாக மாறியுள்ளது. அற நூல்களில் காணலாகும் கல்விச் சிந்தனைகள் வெறும் மொழிக் கல்வியாக மட்டும் நில்லாமல் கற்றல் கொடுத்த மனித மனதை வலுப்படுத்த கற்றவர்களுக்குச் சமூகத்தில் அதிக மதிப்பினைப் பெற்று தந்தது அதனடிப்படையில் அறழலக்கியங்களில் கல்விச் சிந்தனைகளை இக்கட்டுரை ஆய்கிறது.

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ஆய்வுச் சுருக்கம்

“கரிசல் இலக்கியங்களில் மக்களின் வாழ்க்கைச் சூழல்” என்னும் கட்டுரையில் வீணையின் மெல்லிய நரம்புக் கம்பியின் அதிர்வு போன்று எழுதப்பட்டிருக்கும் பா.செயப்பிரகாசம் சிறுகதைகளில் உலாவரும் கரிசல் கதைமாந்தர்களின் வழியாக கரிசல் வட்டார மக்களின் வாழ்க்கைச் சூழலில் வெளிப்படும் மனித மாண்புகள் மற்றும் வாழிடப் பின்னணிகள் ஆகியன இவ்வாய்வுக் கட்டுரையில் உட்படுத்தப்பட்டுள்ளது.

முன்னுரை

நாடோடிகளாக அலைந்து திரிந்து கொண்டிருந்த மனிதன் ஒரே இடத்தில் நிலையாக வாழும் நிலை ஏற்பட்டபின் அவனுடைய சந்ததிகளின் பெருக்கத்தினால் குழு அமைப்பானது சமூகமாக உருவெடுத்தது. இதன் காரணமாக வாழ்க்கையை மனிதன் விரிவுப்படுத்திக் கொண்டான். வெவ்வேறு பகுதிகளில் குடியேறியதால் அவ்வப் பகுதிகளுக்கேற்ப அவர்களின் வாழ்க்கை முறை அமைந்தது. அத்தகைய நோக்கில் பா.செயப்பிரகாசம் தம்முடைய கதைப் படைப்புகளுக்கு உரிய இடப்பின்னணியாகத் தாம் கொண்டுள்ள கரிசல் நில வாழ் மக்களின் சமூக நிலையினைத் தம்முடைய கதைப்படைப்பு களின் வாயிலாக சித்திரிக்கின்ற முறையினை இக்கட்டுரை ஆராய்கின்றது. “பிறக்கும்போது எவனும் காம, குரோத, குற்ற மனோபாவங்களோடு பிறப்பதில்லை. வளர்ப்பும், சமூக சூழ்நிலையும் தான் குற்றங்களை உருவாக்குகின்றன”¹ என்பர்.

கரிசல் மண்

‘கரிசல்’ என்ற சொல்லுக்கு “கருப்பு நிறங்கொண்ட மானாவாரி புஞ்சைப் பிரதேசம்”² என கி. ராஜநாராயணன் விளக்கம் தருகிறார்.

அணியிலக்கணம்

(பொருளணிகள் எனிய உரையுடன்)

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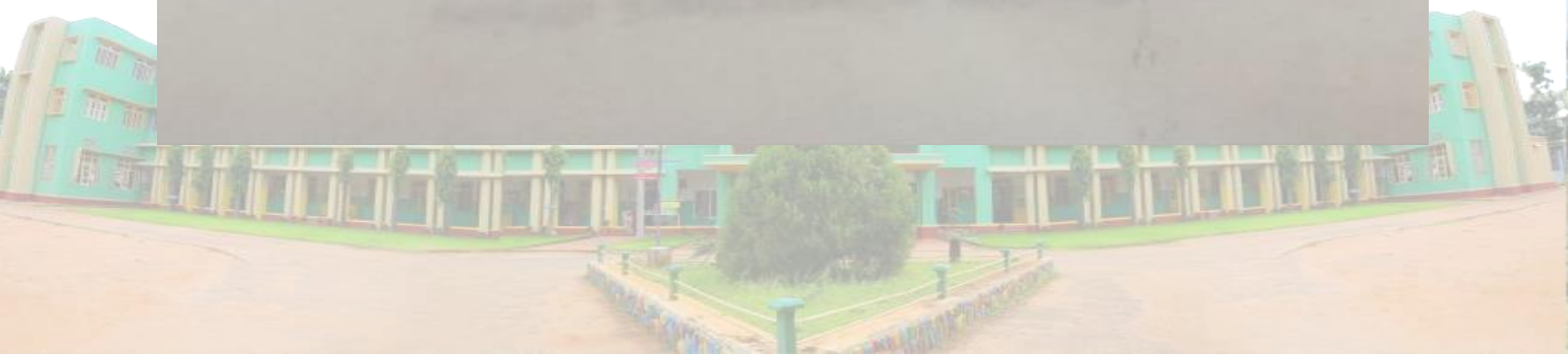
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கலைஞர்களும்



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முனைவர் ம. ஜாஸ்மின் வினோஜா

பத்துப்பாட்டில் கலையும் கலைஞர்களும்

முன்னுரை

கலை, மனித வாழ்வின் உன்னத வெளிப்பாடு. கலை இரசனையற்ற மனித வாழ்க்கையைக் கற்பனைகூட செய்து பார்க்க முடியாது. பார்க்கும் பொருட்களில் கேட்கும் ஒலிகளில், பயணிக்கும் பாதைகளில், காணும் காட்சிகளில் கலையும் கற்பனையும் விரவிக் காணப்படுகின்றன. மனிதன் தோன்றிய காலம் முதலே கலையும் தோன்றிவிட்டது. கலையோடு தன் வாழ்வை பின்னிப் பிணைத்த சமூகம் பல பிரிவுகளாக அக்கலைகளை வளர்த்தெடுத்தது. மனிதனுடைய வாழ்விற்கு உதவியாக இருக்கும் அத்தனை தொழில்களையும் கலைகள் என்றே வரையறுக்கிறார்கள். தச்சு, நெசவு, உழவு, கட்டடம், இசை, நாட்டியம், ஓவியம், சிற்பம் என அனைத்துத் தொழில்களும் கலைகளாகப் பார்க்கப்பட்டன. கலைகள் தொழில்சார்ந்த கலைகளாகவும், பொழுதுபோக்குக் கலைகளாகவும் பார்க்கப்பட்டன. இவற்றையும் தாண்டி மனிதர்கள் தங்களை அழகுபடுத்திக்கொள்ளும் கலைகளும் வரலாற்றில் சிறப்பிடம் பெற்றன. அழகுபடுத்துதல் என்பது ஒப்பனை செய்தல் என்ற கலைத்தன்மையோடு பார்க்கப்பட்டது. தொழில்சார்ந்த கலைகளையும், தொழில்சார்ந்த பொழுதுபோக்குக் கலைகளையும், அழகுபடுத்துதல் என்ற ஒப்பனைக் கலைகளையும் செய்கின்றவர்கள் கலைஞர்கள் எனப் போற்றப்பட்டனர். இக் கலைஞர்களின் கைவண்ணத்தால்தான் கலைகள் சிறப்பாக உருவாக்கப்பட்டன.

கலைகளையும், கலைஞர்களையும் சங்க இலக்கிய நூற்கள் மிகவும் திறம்படப் போற்றியுள்ளன. அதனடிப்படையில் பத்துப்பாட்டில் இடம்பெற்றுள்ள கலைகளையும் அதனை மெருகேற்றிய கலைஞர்களையும் பற்றி இந்நூல் விவரிக்கிறது.

நீர்சல் மண்ணின் கரதலன் க.ரூர



பேரா. முனைவர் அ. டிடல்பின்

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உளர் : இராஜாவூர்

பணி : பேராசிரியை
திருச்சிலுவை கல்லூரி
நாகர்கோவில்



கல்வி : M.A., M.Phil., Ph.D., NET

சிறப்பு : நாகர்கோவில் உள்ள ஹோலி கிராஸ் கல்லூரியில் கடந்த ஆறு ஆண்டுகளாக உதவிப் பேராசிரியராகப் பணியாற்றி வருகிறார். கன்னியாகுமரி மாவட்டத்தில் கரிசல் வட்டார கதைகள் குறித்த முதல் ஆய்வினை மேற்கொண்டு மனோன்மணியம் சுந்தரனார் பல்கலைக்கழகத்தில் முனைவர் பட்டம் பெற்றவர். ஸ்காட் கிறிஸ்தவக் கல்லூரியில் இளங்கலையும் இந்துக் கல்லூரியில் முதுகலைப் பட்டமும் பயின்ற இவர், இளங்கலை மாணவராக இருந்த போது கன்னியாகுமரி மாவட்டத்தில் இருந்து இந்திய குடியரசு தின விழா அணிவகுப்பில் கலந்து கொண்ட முதல் மாணவியாவார். கொண்ட நட்பினை உயிரெனக் காக்கும் சிறந்த பண்புடையவர்.



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விறலி என்ணம் பெண்பாற் கலைஞர்

ஜாஸ்மின் வினோஜா

உதவிப்பேராசிரியை, தமிழ்த்துறை, ஹோலிகிராஸ் கல்லூரி, நாகர்கோவில்

ஆய்வுச்சுருக்கம்

கலை, மனித வாழ்வின் உன்னத வெளிப்பாடு. கலை இரசனையற்ற மனித வாழ்க்கையைக் கற்பனை கூட செய்து பார்க்க முடியாது. பார்க்கும் பொருட்களில் கேட்கும் ஒலிகளில், பயணிக்கும் பாதைகளில், காணும் காட்சிகளில் கலையும் கற்பனையும் விரவிக் காணப்படுகின்றன. மனிதன் தோன்றிய காலம் முதலே கலையும் தோன்றிவிட்டது. கலையோடு தன் வாழ்வை பின்னிப் பிணைத்த சமூகம் பல பிரிவுகளாக அக்கலைகளை வளர்த்தெடுத்தது. ஆயுக்கலைகள் அறுபத்து நான்கும் தமிழகத்தில் 'தான் அரங்கேறி இருக்க வேண்டும் என்று பல்வேறு ஆய்வுகள் சுட்டுகின்றன. இக்கலைகளின் வளர்ச்சியில் பெண்களுக்குப் பெரும் பங்கு இருந்ததை இலக்கியங்கள் வழி உணரமுடிகிறது. சங்க இலக்கியமான பத்துப்பாட்டில் பெண்பாற் கலைஞர்கள் தங்கள் கலைகளைப் பல்வகைகளில் வெளிப்படுத்தியுள்ளனர். கலைஞன் தன் வாழ்வில் மிகப்பெரிய இடத்தை அடைந்ததற்கு அவனுடன் இணைந்து செயல்பட்ட பெண் கலைஞர்கள் முக்கியப் பங்காற்றியுள்ளனர். ஆடல், பாடல் என ஒவ்வொரு கலையிலும் பெண்பாற் கலைஞர்களின் பங்கு ஈடு இணையற்றது. விறலி என்னும் பெண்பாற் கலைஞர் தங்கள் கலையை சிறப்பாக வெளிப்படுத்தி உள்ளமையை இக்கட்டுரை விவரிக்கிறது.

முன்னுரை

பாணர், பொருநர், கூத்தர் என ஆண்பாற் கலைஞர்களின் வரிசையில் விறலியர், பாடினி என பெண்பாற் கலைஞர்களும் சங்க இலக்கிய காலகட்டத்தில் சிறந்து விளங்கியுள்ளனர். இசையோடியைந்த வாழ்க்கை வாழ்ந்த கலைஞர்கள் மத்தியில் அழகுபட இசை மீட்டும் பணியைப் பெண் கலைஞர்கள் நிறைவேற்றியுள்ளனர். ஆடலையும், பாடலையும் தொழிலாகக் கொண்ட பெண்கள் விறலியர் எனப்பட்டனர். வண்ணம் பாடுதல் யாழ் மீட்டுதல் போன்ற பலவிதமான இசையாற்றல் உடையவர்களாக விறலியர் காணப்பட்டனர். கலைஞர்களின் குடும்பத்தில் விறலியின் பங்கு என்பது மிகவும் முக்கியம் வாய்ந்தது. ஆற்றுப்படை நூல்கள் மட்டுமல்லாது சங்க இலக்கிய ஏனைய நூல்களிலும் பாடுவதில் வல்லமை பெற்றுத் திகழ்ந்த விறலியர்கள் பற்றி குறிப்பிடப்பட்டுள்ளதை இக்கட்டுரையில் காண்போம்

விறலி என்பவர் யார்?

“விறலியர் பாணர் இனத்தில் ஒரு பிரிவினர் ஆவர். ஆடல் தொழில் புரியும் ஆண் மக்கள் கூத்தர் எனப்படுவர், பெண்கள் விறலியர் எனப்படுவர். பாணனும் பாடினியும் ஒரு வகுப்பார் என்றும், கூத்தரும், கூத்தியும் பாணர்களில் ஒரு பிரிவினர் என்றும் விறலியர் இவ்விரண்டும் அல்லாத ஒரு தனி இனம் என்றும் கூறுவோருமுண்டு. பாடினிகளே விறலியர் என்று கூறுவோரும் உண்டு” என்பது சி.பாலசுப்பிரமணியனின் கருத்து

“இசைக்கலையில் வல்லபாணர் குலப் பெண்கள் விறலியர் என்று அழைக்கப்பட்டுள்ளனர்” என்பது ஏ.என்.பெருமாள் அவர்களது கருத்து. விறலி, யாழ், ஆகுளி, பதலைகருவிகளைக் கூடைகளில் வைத்து இருபுறம் தோளில் வைத்து சுமந்துசெல்வர். அவர்களுடன் விறலி இசைக் கருவிகளைத் தோளில் வைப்பதற்குத் துணைபுரிபவன் என்பதைநெடும் பல்லியத்தனாரும்,

“நல் யாழ் ஆகுளிபதலையொடு,சுருக்கிச்
செல்லாமோதில் சிலவளைவிறலி” (புறம். 64:1-2)

“ஒருதலைப் பதலைதூங்க ஒருதலைத்
தூம்பகச் சிறுமுழாத் தூங்கத் தூக்கி” (புறம். 103:1-2)

என்று ஒளையவாரும் குறிப்பிடுகின்றனர். பண் என்ற சொல்லுக்குப் பாட்டு, யாழ், இசை என்று பல பொருள்கள் உண்டு. இசைத் தமிழைப் போற்றி வளர்த்தவர்கள் பாணர் எனப்பட்டனர். விறலி என்பவள் பாணப் பெண் ஆவாள். பாடுகின்ற இயல்புடையபாணர் குடியிலே பிறந்த பெண் விறலி என அழைக்கப்பட்டாள். பரிசில் பெற்ற பொருநன் ஒருவன் எதிரில் வருவோனிடம் பேசத் தொடங்கும் போது





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சித்தர்கள் கார்டும் சீரான வாழ்வு

செ.ஜா

உதவிப்பேராசிரியை, தமிழ்த்துறை, ஹோலிகிராஸ் கல்லூரி, நாகர்கோவில்.

ஆய்வுச்சுருக்கம்

மனிதர்களின் வாழ்வு சிறப்பாக அமைய சில கட்டமைப்புகள் தேவை.கட்டுப்பாடு இல்லாத வாழ்வு கட்டுக் குலைந்துவிடும்.தன் வாழ்விலும் பிறர்வாழ்வை நேசித்தவர்கள் சித்தர்கள்.தங்களின் அரிய சக்தியை மக்களின் நன்மைக்காக அன்றி தங்களின் சுய தேவைக்காகப் பயன்படுத்த மாட்டார்கள்.சாதிமத ஒற்றுமையோடு நோயற்ற வாழ்வு வாழ்ந்து சிறப்படையச் சொன்னவர்கள்.தன் உயர்நிலைக்கும் தாழ்நிலைக்கும் தானே காரணம் என்பதை உணர்த்தியவர்கள்.நிலையாக ஓரிடத்தில் வாழாத இவர்கள் வாழ்வுக்குத் தேவையான நிலையான கருத்துகளையே உலகுக்குக் கொடுத்தனர்.சீரான வாழ்வுக்கு அவர்கள் காட்டிய வழி மேன்மையானது.

முன்னுரை

வையகம் அதிலே வாழும் நாட்கள் மிகக் குறைவு.அந்தக் குறுகிய நாட்களிலே தானுண்டு தன் வாழ்வுண்டு எனக்கழித்துச் செல்வோரே மிகப்பலர்.பல்லாயிரம் கோடி உயிர்கள் வாழ்ந்து மடிந்துள்ள இவ்வுலகில் மிகச்சிலரே இன்றும் மறவாமல் போற்றப்படுகின்றனர். அதற்குக் காரணம் அவர்கள் தங்களுக்காக வாழாமல் பிற உயிர்களுக்காக வாழ்ந்தனர்.கைமாறு கருதாமல் உதவி செய்தனர்.அவ்வகையில் சித்தர்களின் வாழ்வு சிறப்புக்குரியது.தங்கள் வாழ்வின் வழியாக பல நல்ல செயல்பாடுகளை உலகுக்கு எடுத்துக்காட்டினர்.சித்தர்கள் காட்டிய சீரான வாழ்வின் அடிப்படை தன்மைகளை ஆராய்வதாக இக்கட்டுரை அமைகிறது.

சித்தர்களின் வாழ்வு

ஐம்பொறிகளையும் அடக்கி உடல் இன்பங்களை வெறுத்து எண்ணங்களை நன்னெறியில் செலுத்தி மக்களுக்கு நன்மைகள் செய்து நல்ல வழி காட்டி வாழ்ந்தவர்களே சித்தர்கள் எனப்பட்டனர்.சித்தம் என்பது மனம்.கட்டுப்பாடு இல்லாது கண்டபடி திரியும் மனத்தை தவமென்னும் கடிவாளத்தால் தன்வயப்படுத்தி சீரான வாழ்வு வாழ்ந்தவர்களே சித்தர்கள்.சாதாரண மனிதர்களால் இயலாத கடும் தவத்தை மேற்கொண்டு உறக்கம் தவிர்த்து உயிர்களுக்கு நற்பயன்களை அளிக்க வந்த உயர்ந்த ஆத்துமாக்களே சித்தர்கள்.


சித்தர்கள் ஓரிடத்தில் நிலையாக வாழ்ந்தவரில்லை.மலைகளிலுள்ள குகைகளிலும் காடுகளிலும் வாழ்ந்து ஊர் ஊராக அலைந்து திரிவார்கள்.தாங்கள் செல்லும் ஊர்களிலுள்ள மக்களுக்கு நோய்களைத் தீர்த்தும் அவர்களுக்கு நல்ல அறிவுரைகள் பகர்ந்தும் தங்கள் வாழ்வைப் பிற உயிர்களுக்காக அர்ப்பணித்தவர்களே சித்தர்கள்.அணிமா(அணுவை விட மிகச்சிறிய உருவிலே உலவும் ஆற்றல்),மகிமா (மலையை விட பெரிய உருவெடுத்து உலவும் ஆற்றல்),இலகிமா(உடம்பை கனமில்லாமல் மிகவும் லேசாகச் செய்வதுடன் நீரிலும் நிலத்திலும் கால் படாமல் விரைந்து செல்லும் ஆற்றல், கரிமா(ஐம்புலன்கள் வழி வரும் இன்ப துன்பங்களைப் பற்றி கவலைப்படாமல் அவற்றுடன் எவ்வித தொடர்புமின்றி இருப்பது,பிராத்தி(தான் எதை நினைத்தாலும் எதை விரும்பினாலும் அதை அடையும் ஆற்றல்),பிரகாமியம் (தன் நினைப்பின் வன்மையால் எல்லாவற்றையும் படைக்கும் ஆற்றல்),ஈசத்துவம் (காண்பவர் அனைவரும் வணங்கும்படியான தோற்றம் பெற்றிருத்தல்),வசித்துவம் (உலகம் முழுவதையும் தன் வயப்படுத்தி நடத்துதல்).இவ்வாறான எட்டுவகை ஆற்றலைப் பெற்று விளங்கினர்.

சித்தர்களின் ஆற்றல் மிகப்பெரியது.அவர்கள் சாகா வரம் பெற்றவர்களாகக் கருதப்படுகிறது.தம்முடைய உடலை அப்படியே விட்டுவிட்டு மற்றவர்கள் உடலிலேச் சென்று செயல்படும் ஆற்றல் கொண்டவர்கள்.அந்தச் செயல் கூடுவிட்டுக் கூடுபாய்தல் என்று சொல்லப்படுகிறது.

சித்தர்கள் சிறந்த சமூகத் தொண்டர்கள் என்றே சொல்லலாம்.அவர்களிடம் அளவில்லாத ஆற்றல்கள் இருந்தும் அதனை தங்களுக்காக ஒருபோதும் பயன்படுத்த மாட்டார்கள். பிறருக்காகவே தங்கள் அற்புத ஆற்றலைப் பயன்படுத்துவர்.

சாதி, மத ஒற்றுமை வலியுறுத்தல்

மனிதர்களின் பிரிவு அதிகமாக சாதி,மதத்தின் அடிப்படையிலேயே அமைகிறது.நாகரிகம் வளர்ந்த இந்த காலத்திலும் சாதி,மதப்பிரிவு மக்களிடையே இருப்பது வேதனைக்குரியதாக உள்ளது.சாதிகளால்



**வாழ்நியல்
இலக்கணம்
வகுத்த
வள்ளுவம்**

[ஆய்வுக் கட்டுரைத் தொகுப்பு]

தொகுப்பாசிரியர்
உடையாரிகோயில் குணா

பதிப்பாசிரியர்கள்

முனைவர் ஜே. ஸ்டெல்லா
முனைவர் தி. நெல்லையப்பன்
முனைவர் இரா. இந்து
முனைவர் ம. மேரி
திரு. ம. சுப்பராயன்
திரு. அ. முருகன்

உலகத் திருக்குறள் ஐந்தாவது மாநாடு - 2023 - திருநெல்வேலி
தமிழ்த்தாய் அறக்கட்டளை வெளியீடு - 56



தூல் குறிப்பு

<p>தலைப்பு</p> <p>தொகுப்பாசிரியர் பதிப்பாசிரியர்கள்</p>	<p>வாழ்வியல் இலக்கணம் வகுத்த வள்ளுவம் (ஆய்வுக் கட்டுரைத் தொகுப்பு) உடையார்கோயில் குணா முனைவர் ஜே. ஸ்டெல்லா முதல்வர் (ஓய்வு) போட்டித் தேர்வுகள் பயிற்சி மையம், முனைவர் தி. நெல்லையப்பன் மதுரை காமராசர் பல்கலைக் கழகம், மதுரை. முனைவர் இரா. இந்து, தமிழ்ப் பல்கலைக்கழகம், தஞ்சாவூர். முனைவர் ம. மேரி புனித யூதா கல்லூரி, தூத்துார். திரு. ம. சுப்பராயன், பெரியார் மணியம்மை பல்கலைக் கழகம், தஞ்சாவூர். திரு. அ. முருகன், சென்னைப் பல்கலைக் கழகம். செப்டம்பர் 2023</p>
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நிலையாமை ஒன்றே நிலையானது



ஆய்வாளர்

முனைவர் சா.டெய்சியாய்

உதவிப்பேராசிரியர்,
தமிழ்த்துறை,
ஹோலிகிறாஸ் கல்லூரி,
நாகர்கோவில்.

முன்னுரை

உலகத்திலுள்ள எவ்வகைப்பட்ட பொருளும் ஒரு நாள் அழிந்து போகும் என்பதை உணர்த்தும் பதமே நிலையாமை. இந்த உலகில் நிலையாமை மட்டும்தான் நிலையான உண்மை. இந்த உண்மையை நாம் நம்முடைய வாழ்க்கை அனுபவங்கள் மூலம் தெளிந்து உணர்கிறோம். இந்தப் பயணத்தில் நாம் தடுமாறும் சில தருணங்களில் இளமை மீதும், செல்வம் மீதும், யாக்கை மீதும் இச்சை கொண்டு நிதானம் இழந்து மயங்கி நிற்கிறோம். இத்தகைய மயக்க நிலையை எதிர் கொள்ளவும் அதிலிருந்து மீளும் வழிமுறைகளையும் நம் முன்னோர்கள் தெளிவாக வகையறுத்துக் கூறியுள்ளனர். அப்படி நம் மூதாதையர்கள் அருளிய மெய்யுணர்வையும், மெய்யறிவையும் அறிந்து அதன் வழி நிற்பவர்களின் வாழ்க்கை அர்த்தமுள்ளதாகவும் அனைவருக்கும் பயனுள்ளதாகவும் அமைகிறது. செந்நாப் போதகர் வள்ளுவன் இந்த நிலையாமையையும் அதன் கூறுகளையும் தனியொரு அதிகாரமாகவே படைத்துள்ளார்.

உலகம் நிலையற்றது

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வாழ்வியல் இலக்கணம் வகுத்த வள்ளுவம்

மனிதமும் மதிப்பீடுகளும்



மனிதமும் மதிப்பீடுகளும்



ஹோலிகிறாஸ் கல்லூரி (தன்னாட்சி)
நாகர்கோவில்

நூல் உருவாக்கம்

முனைவர் J.M. வினிதா சார்லஸ்
முனைவர் M. ஜஸ்டின் பியூலா
முனைவர் S. கனிதா
முனைவர் S. டெய்சி பாய்




இமைகள் முழுக்க இலட்சியம் இருந்தால்
சுமைகள் கூட சுகமான சுமைதான்
மனதில் உனக்கு எதற்கு பாரம்?
தொடுவானம் கூட தொட்டுவிடும் தூரம்
சுயத்தை இழந்து பறக்கும் மனிதா!
மனதை சற்றுத் திருப்பிப் பார்
மறந்துபோன மதிப்பீடுகளை திரும்பிப் பார்
மண்ணில் இன்றே மகத்துவம் காண்பாய்!
உடலின் வளர்ச்சிக்கு உணவிடும் மனிதா!
உயர்ந்த விழுமியங்களால்
உணர்வுக்கும் உணவிடு!
உயர்ந்த உனக்குள் இருக்கு!
உலகை இன்றே வெற்றியால் நிரப்பு.

- Dr. J.M. Vinitha Charles







வாழ்நியல் இலக்கணம் வகுத்த வள்ளுவம்

[ஆய்வுக் கட்டுரைத் தொகுப்பு]

தொகுப்பாசிரியர்
உடையாரிகோயில் குணா

பதிப்பாசிரியர்கள்

முனைவர் ஜே. ஸ்டெல்லா
முனைவர் தி. நெல்லையப்பன்
முனைவர் இரா. இந்து
முனைவர் ம. மேரி
திரு. ம. சுப்பராயன்
திரு. அ. முருகன்

உலகத் திருக்குறள் ஐந்தாவது மாநாடு - 2023 - திருநெல்வேலி
தமிழ்த்தாய் அறக்கட்டளை வெளியீடு - 56

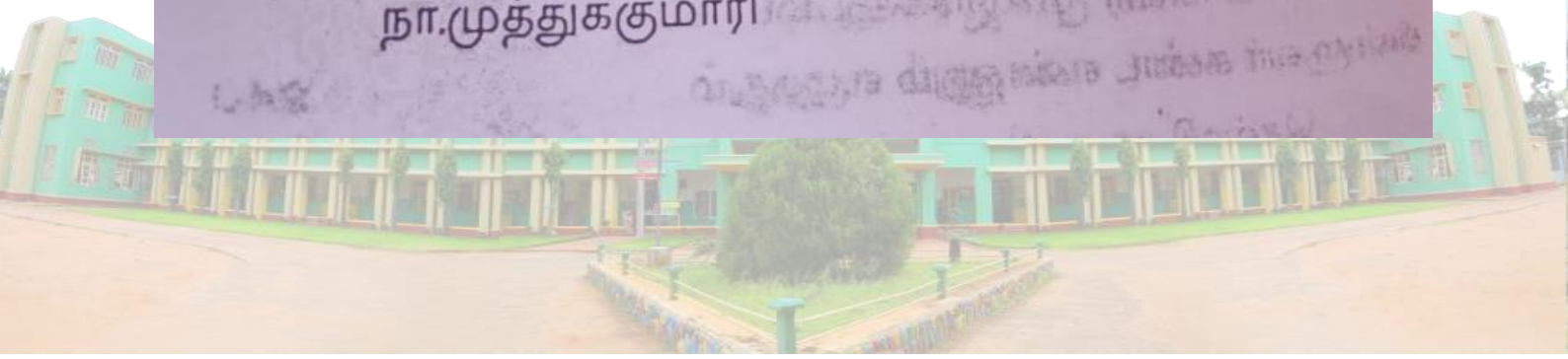


தூல் குறிப்பு

<p>தலைப்பு</p> <p>தொகுப்பாசிரியர் பதிப்பாசிரியர்கள்</p>	<p>வாழ்வியல் இலக்கணம் வகுத்த வள்ளுவம் (ஆய்வுக் கட்டுரைத் தொகுப்பு) உடையார்கோயில் குணா முனைவர் ஜே. ஸ்டெல்லா முதல்வர் (ஓய்வு) போட்டித் தேர்வுகள் பயிற்சி மையம், முனைவர் தி. நெல்லையப்பன் மதுரை காமராசர் பல்கலைக் கழகம், மதுரை. முனைவர் இரா. இந்து, தமிழ்ப் பல்கலைக்கழகம், தஞ்சாவூர். முனைவர் ம. மேரி புனித யூதா கல்லூரி, தூத்தூர். திரு. ம. சுப்பராயன், பெரியார் மணியம்மை பல்கலைக் கழகம், தஞ்சாவூர். திரு. அ. முருகன், சென்னைப் பல்கலைக் கழகம். செப்டம்பர் 2023</p>
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தருக்குறளில் சித்த மருத்துவம்

ஆய்வாளர்

முனைவர் **பி.ஆன்சிமோஸ்**

தமிழ்த்துறைத் தலைவர் (சுயந்த),
ஹோலி கிறாஸ் கல்லூரி (குன்னாட்சி),
நாகர்கோவில்.
கன்னியாகுமரி மாவட்டம்.

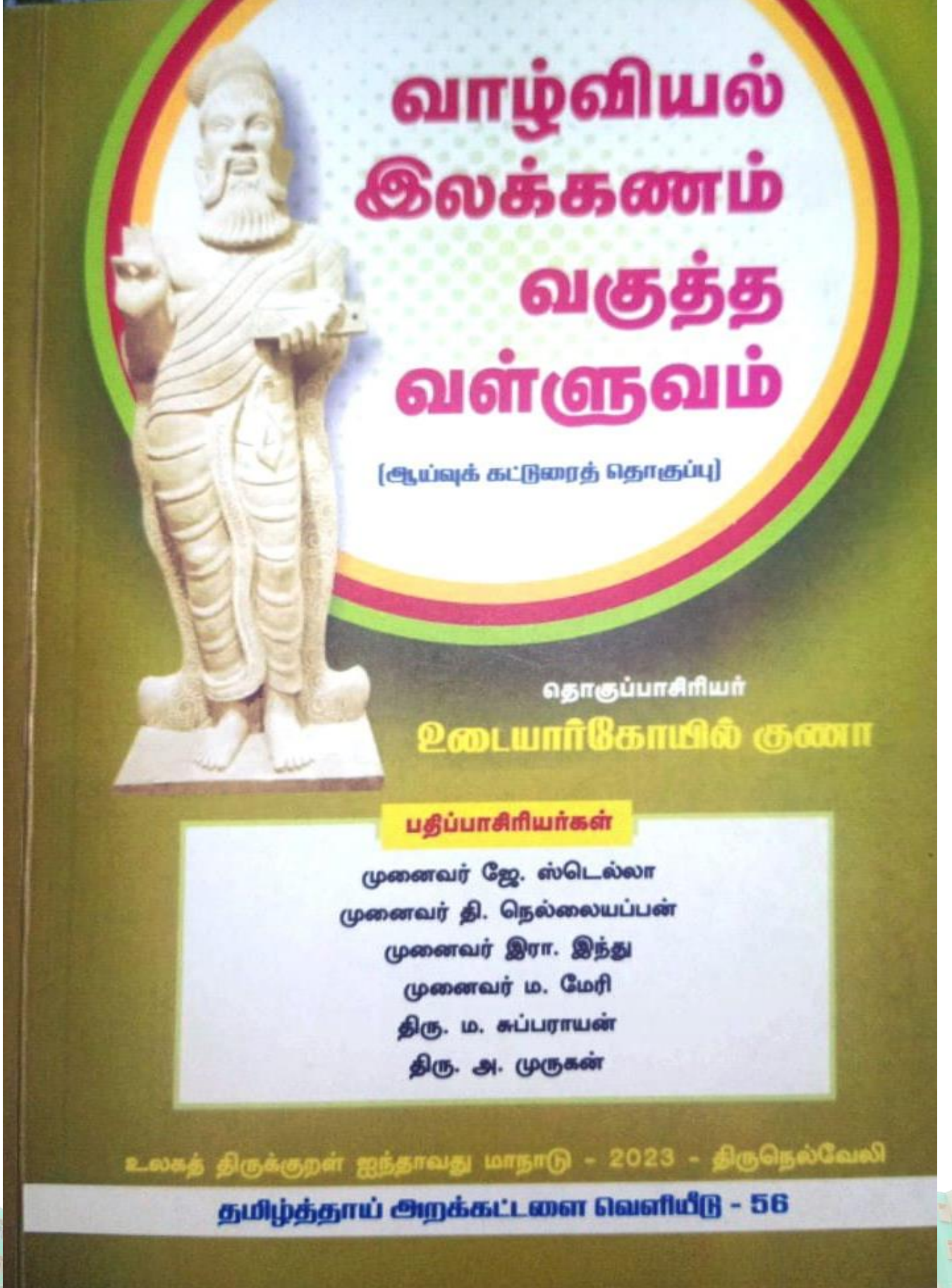
முன்னுரை

ஒரு சிறந்த மருத்துவம் என்பது நோயாளியின் நோயை நீக்குவது அன்று. அந்நோய் மீண்டும் அவர் மீது வராமல் மருந்தளிப்பது சிறந்த மருத்துவம் ஆகும். 'உண்ணும் உணவே மருந்தாக அமையும்' எனவே மனிதன் தன் வாழ்க்கையில் மருந்தை தேடி அலைய அவசியம் இல்லை என்கிறார் வள்ளுவர். இதனை வலியுறுத்தும் விதமாக 'மருந்து' என்னும் அதிகாரத்தை வள்ளுவத்தில் படைத்துள்ளார். மருந்தின் அவசியம், நோய் வருவதற்கான காரணம், அதனைத் தீர்க்கும் வழிகளை வள்ளுவத்தின் வழி ஆராய்வதே இக்கட்டுரையின் நோக்கம்.

நோய் பெருந்தொற்று

“மருந்து ஒன்றும் காணாத இந்நோய்க்கு தூய்மை மாற்றம் காண்பதே நன்று”

மருந்தினால் தீர்க்கமுடியாத பெருநோய் தொற்றுக்கு சுற்றுப்புறத் தூய்மை காண்பதே சிறந்தது என்கிறார் வள்ளுவர்.



**வாழ்நியல்
இலக்கணம்
வகுத்த
வள்ளுவம்**

[ஆய்வுக் கட்டுரைத் தொகுப்பு]

தொகுப்பாசிரியர்
உடையாரிகோயில் குணா

பதிப்பாசிரியர்கள்

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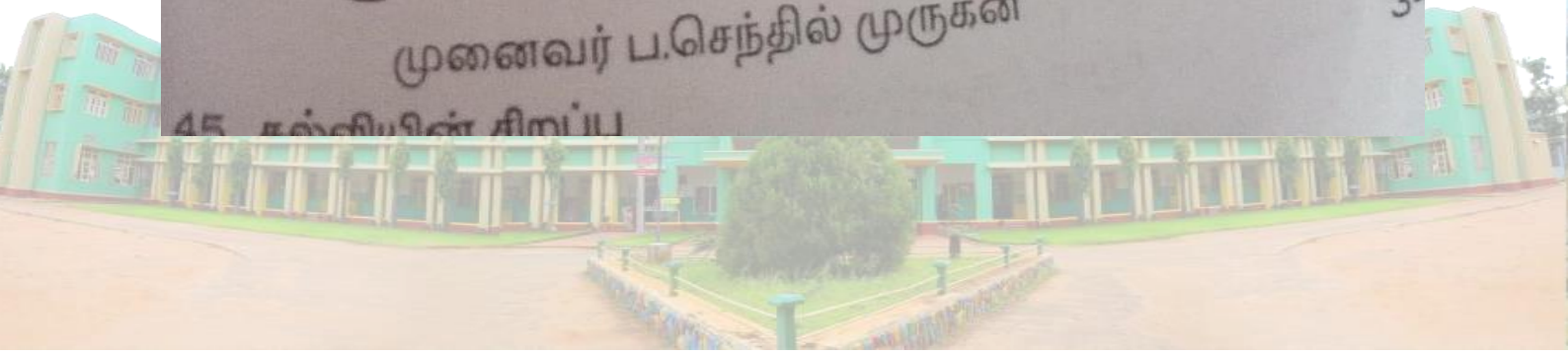


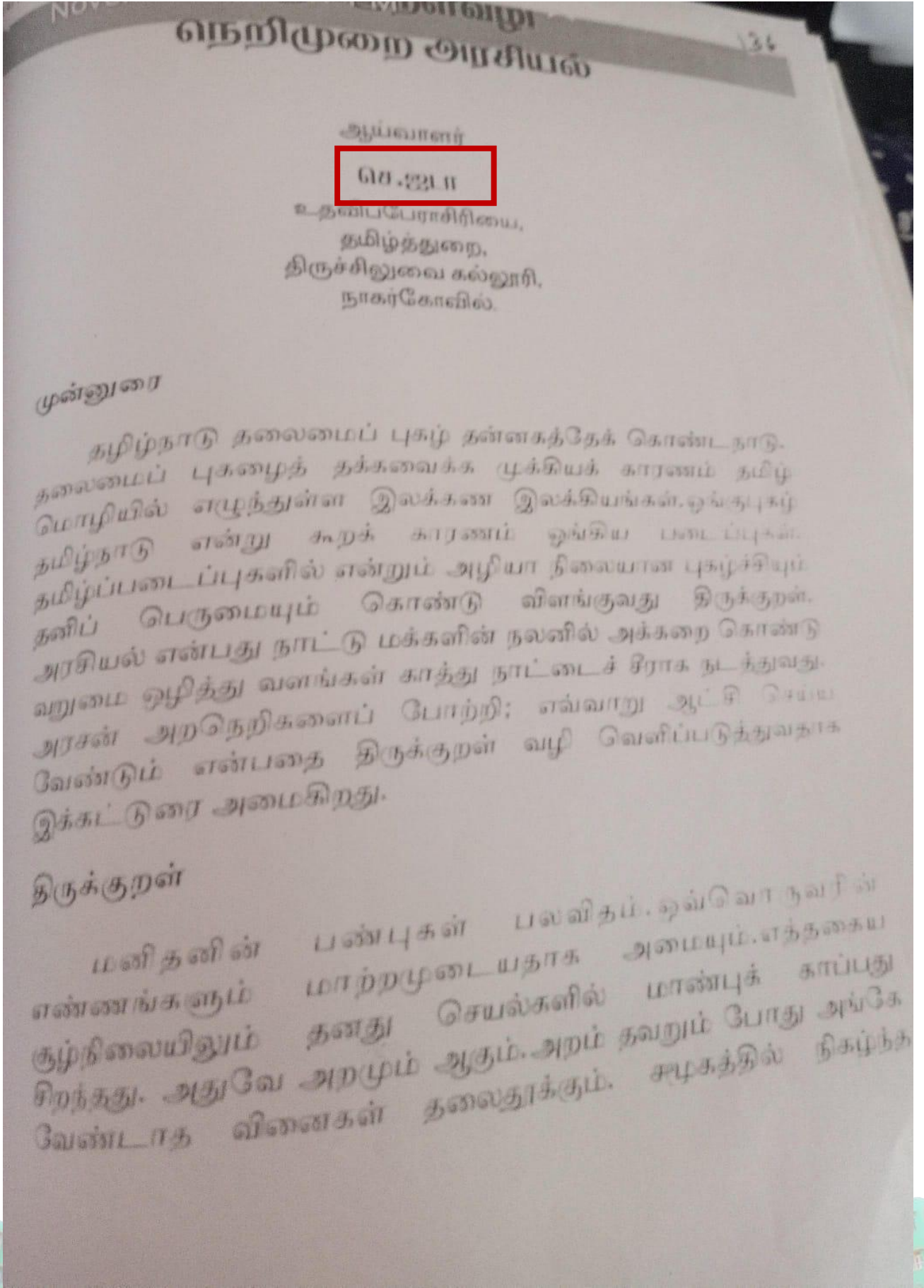
தூல் குறிப்பு

<p>தலைப்பு</p> <p>தொகுப்பாசிரியர் பதிப்பாசிரியர்கள்</p>	<p>வாழ்வியல் இலக்கணம் வகுத்த வள்ளுவம் (ஆய்வுக் கட்டுரைத் தொகுப்பு) உடையார்கோயில் குணா முனைவர் ஜே. ஸ்டெல்லா முதல்வர் (ஓய்வு) போட்டித் தேர்வுகள் பயிற்சி மையம், முனைவர் தி. நெல்லையப்பன் மதுரை காமராசர் பல்கலைக் கழகம், மதுரை. முனைவர் இரா. இந்து, தமிழ்ப் பல்கலைக்கழகம், தஞ்சாவூர். முனைவர் ம. மேரி புனித யூதா கல்லூரி, தூத்தூர். திரு. ம. சுப்பராயன், பெரியார் மணியம்மை பல்கலைக் கழகம், தஞ்சாவூர். திரு. அ. முருகன், சென்னைப் பல்கலைக் கழகம். செப்டம்பர் 2023</p>
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செ.ஜி.பி

உதவிப்பேராசிரியை,
தமிழ்த்துறை,
திருச்சிலுவை கல்லூரி,
நாகர்கோவில்.

முன்னுரை

தமிழ்நாடு தலைமைப் புகழ் தன்னகத்தேக் கொண்ட நாடு. தலைமைப் புகழைத் தக்கவைக்க முக்கியக் காரணம் தமிழ் மொழியில் எழுந்துள்ள இலக்கண இலக்கியங்கள். ஒங்குபுகழ் தமிழ்நாடு என்று கூறக் காரணம் ஒங்கிய படைப்புகள். தமிழ்ப்படைப்புகளில் என்றும் அழியா நிலையான புகழ்ச்சியும் தனிப் பெருமையும் கொண்டு விளங்குவது திருக்குறள். அரசியல் என்பது நாட்டு மக்களின் நலனில் அக்கறை கொண்டு வறுமை ஒழித்து வளங்கள் காத்து நாட்டைச் சீராக நடத்துவது. அரசன் அறநெறிகளைப் போற்றி; எவ்வாறு ஆட்சி செய்ய வேண்டும் என்பதை திருக்குறள் வழி வெளிப்படுத்துவதாக இக்கட்டுரை அமைகிறது.

திருக்குறள்

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பாரதியின் தொலைநோக்குப் பார்வை

முனைவர் சா.டெய்சிபாய்

உதன்பேராசிரியர்

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ஹோலிகிராஸ் கல்லூரி (தன்னாட்சி)

நாகர்கோவில்.

முன்னுரை

"கத்தி முனையை விட பேனா முனைக்கு சக்தி அதிகம்" என்பதை தமிழுக்கும் தமிழருக்கும் முதன்முதலாக அறிமுகப்படுத்திய ஒரு தீர்க்கதரிசி தான் பாரதி. எல்லோருக்கும் பிறப்பு என்பது ஒரு சம்பவம். ஆனால் அந்தச் சம்பவத்தை சரித்திரமாக மாற்றும் வல்லமை நம் ஒவ்வொருவரிடமும் இருந்தாலும் தன் வாழ்நாட்களில் அதன் விளைவையும் சமூகத்திற்கு தன் பங்களிப்பினையும் கொடுக்கும் சுயநலம் இல்லாத பொதுநலம் உடையவர்கள் மிகச் சிலரே. பெண் அடிமைத்தனமும் சாதிய முரண்பாடுகளும் அரங்கேறி கொண்டிருந்த காலக்கட்டத்தில் மிகவும் துணிச்சலோடு சமுதாயத்தை எதிர்த்தார். சமுதாயம் வகுத்த பொய்யான வாழ்வியல் விழுமியங்களையும் மூடப்பழக்க வழக்கங்களையும் வேரறுக்க ஆசைப்பட்டு தான் அணிந்திருந்த பூநூலை அறுத்தெறிந்தார். பாரதியை இன்றும் அனைவரும் கவிஞராக மட்டுமே பார்க்கின்றோம். அவர் தொலைநோக்கு சிந்தனை உடையவர். கல்வியில் தொலைநோக்கு, அறிவியலில் தொலைநோக்கு, பொருளாதாரத்தில், பெண் விடுதலையில் இப்படி கூறிக்கொண்டே போகலாம். நாட்டு விடுதலைக்காக எழுச்சி கொண்ட பாரதிக்குப் பல வழிகளிலும் நம் நாடு முன்னோக்கிச் செல்ல வேண்டும் என்ற தொலைநோக்கும் இருந்ததை இக்கட்டுரை விளக்குகின்றது.

கல்வியில் தொலைநோக்கு

கல்வி என்பது வாழ்வியல் மற்றும் நாட்டு வளத்தை உருவாக்குவதற்கான மூலதனம் மட்டுமல்ல. கல்வியே ஒரு வளம்தான். அவ்வளம் நமக்கு பயன்தருவது மட்டுமல்லாமல் பிற வளங்களையும் உருவாக்கும். ஆதலால்தான்,

"உற்றுழி உதவியும் உறுபொருள் கொடுத்தும்

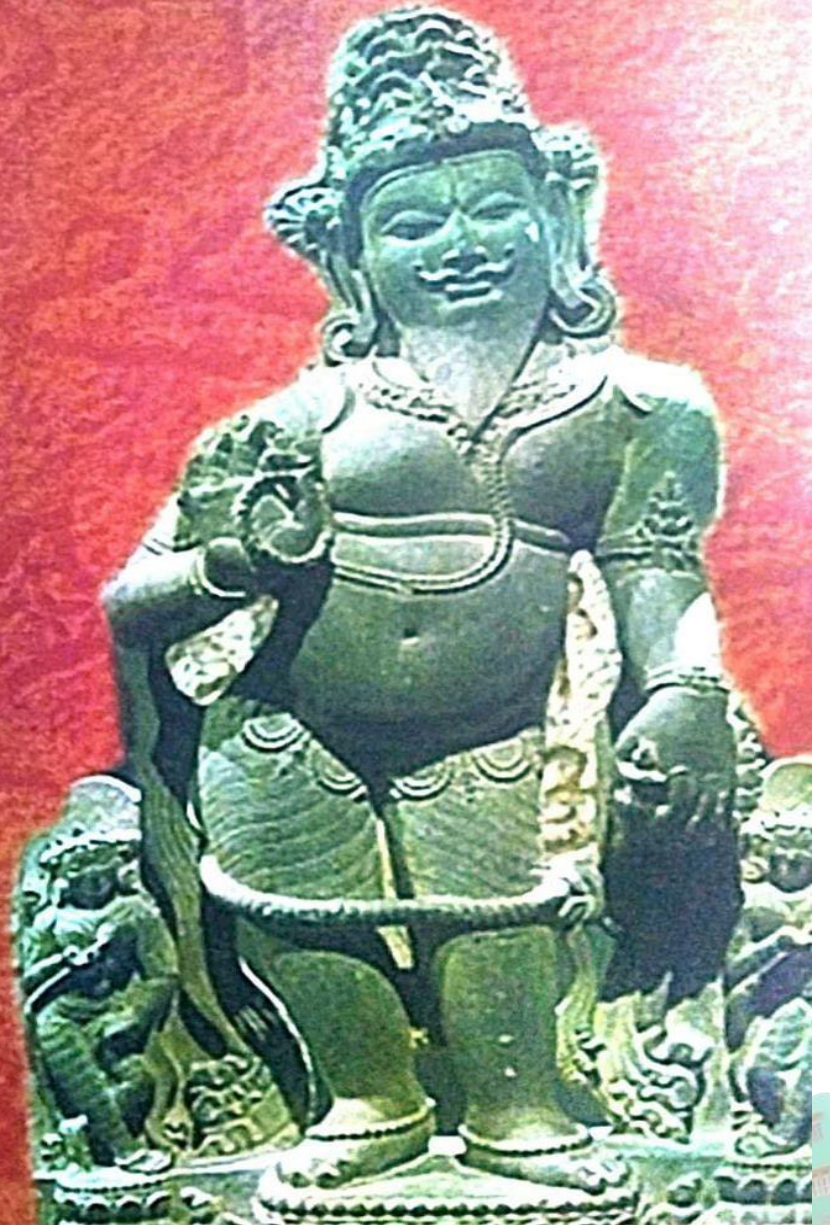
பிற்றைநிலை முனியாது கற்றல் நன்றே"

என்று கல்வியின் தேவையை நம் முன்னோர்கள் வலியுறுத்தினர். மனிதன் உயிர் வாழ்வதற்கு உணவு எவ்வளவு முக்கியத் தேவையோ, அதைப்போல கல்வியும் தேவை என்பது பாரதியின் அழமான நம்பிக்கை. மேலும் கற்கும் கல்வியை அவரவர் தாய்மொழியில் கற்பதே நன்மைதரும் என்பதில் திண்ணம் உடையவர். விளையாட்டுகளிலும் பிள்ளைகள் அதிக ஆர்வம் உடையவர்களாக இருக்க வேண்டும் என்பதும் பாரதியின் பரிந்துரையாக உள்ளது. "சுவரில்லாமல்



தமிழ் இலக்கிய மரபு - நாட்டுப்புற மரபு:

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ஆய்வுச்சுருக்கம்

வளர்ந்துவரும் ஆய்வுத்துறைகளில் நாட்டுப்புறவியலும் ஒன்றாகும். இவை பல்வேறு கூறுகளைக் கொண்டது. ஒரு சமுதாயத்தின் உள்ளார்ந்த அமைப்புகளை வெளியிடுவதாக உள்ளன. மரபு வழியாக வாழ்ந்து வருகின்ற மக்களின் வாழ்வையும் வாழ்வியல் கூறுகளையும் படம் பிடித்துக்காட்டுவது நாட்டுப்புறவியலாகும். கடலும் கடல் சார்ந்த நிலம் நெய்தல் திணையாகும். கடற்பரப்பையே சார்ந்து வாழும் கன்னியாகுமரி மாவட்டத்தில் உள்ள நெய்தல் திணை மக்களின் தொழிற்பாடல்கள், பாடலின் தன்மைகள் இவற்றை கள ஆய்வின் மூலம் தரவுகள் சேகரித்து ஆய்வு மேற்கொள்ளப்பட்டுள்ளது.

முன்னுரை

நெய்தல் திணை அன்பின் ஐந்திணைகளில் ஒன்று நிலத்திணைச் சுட்டும் தன்மையிலும், கடலும் கடல் சார்ந்த பகுதியிணைக் குறிக்கிறது. புலவர்களால் உருவாக்கப்பட்டுக் கற்றவர்களால் காப்பாற்றப்படுபவை இலக்கியங்கள். பாமர மக்களால் உருவாக்கப்பட்டு அவர்களாலேயே காப்பாற்றப்படுபவை நாட்டுப்புறப் பாடல்கள். இந்த வகையில் நெய்தல் சமுதாயத்தில் மீனவர்கள் பாடும் தொழிற்பாடல்கள் பாடல்கள் கேட்பதற்கு இனிமையாகவும் அவர்ளது வாழ்க்கையினைப் பிரதிபலிப்பதாக அமைந்துள்ளது. இதனைப் பற்றி விரிவாக காணலாம்.

மீனவர்கள் கடற்கரையில் பாடும் பாடல்கள்

மீனவர்கள் ஆழ்கடலில் சென்று மீன்களைப் பிடித்துக் கொண்டு வருவதோடு இல்லாமல் கடற்கரையில் இருந்து வலையினைப் பின்னுவதும் கடலில் வலையினைப் போட்டு மீன் கிடைத்தவுடன் வலையினைச் சேர்த்து இழுப்பதும், கட்டுமரத்தினைக் கடலில் நள்ளுவதும் போன்ற செயல்களைச் செய்கின்றனர். இவ்வாறு

தமிழில் தலித் இலக்கியம் (ஒடுக்கப்பட்டோரின் உரிமைக் குரல்)

தொகுதி - 1



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முன்னுரை

மக்கள் கூட்டமாகச் சேர்ந்து வாழத் தொடங்கிய போது தொடங்கியது சமூகம் என்னும் நிறுவனமாகும். சமூகத்தில் தொழில், பொருளாதாரம், வாணிபம் முதலிய செயல்பாடுகள் தோன்றி வளர்ந்த பொழுது சமூகம் பிளவுபட்டதாகத் தோன்றியது எனலாம். இதனால் சாதி அமைப்பு முறையும், பொருளாதார ஏற்றத்தாழ்வும் தோன்றியது. சாதி, பொருளாதாரம், அரசு, குடும்பம் போன்றவை ஒரு சமூகத்தால் வளர்த்தெடுக்கப்படும்போது சமூகத்தில் அடுக்குகள் தோன்றுகின்றன. ஒவ்வொரு நிறுவனத்தினுள் வாழும் மக்களினமும் குறிப்பிட்ட வகை மக்களை ஒடுக்குதலுக்கு உள்ளாக்குகின்றனர். இதனால் ஒடுக்கப்பட்டோர் என்ற மக்கள் தொகுதி தோன்றுகின்றது.

இலக்கியங்கள் தோன்றிய காலந்தொட்டு தங்களது வாழ்வியல் நிகழ்வையும், சமூகப் போராட்ட நிலைப்பாடுகளையும் ஒடுக்கப்பட்டோர் பதிவு செய்துள்ளதைச் சந்தர்ப்பமாக இலக்கியங்களில் இருந்து இன்றைய நாவல்கள் வளர்வதற்கு ஒவ்வொரு காலக்கட்டத்திலும் அறிந்து கொள்ளும் வகை அமைகின்றது.

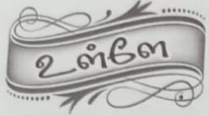
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	அழிசி
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	பெரியன்
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	தொண்டைமான் இளந்திரையன்
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	கட்டி
	வடநாட்டு குறுநில மன்னர்

தமிழகம் அன்றும் இன்றும்

சங்ககாலத்தில் தமிழகம் சேர, சோழ, பாண்டிய நாடுகளாக விளங்கியது. இத்தமிழகத்தை முடிமன்னர் மூவேந்தர் ஆட்சிபுரிந்தனர். முடிவேந்தரின் ஆட்சிப்பகுதிகளில் அவர்களுக்குக் கீழ் பல குறுநில மன்னர்கள் (சிற்றரசர்கள்) இருந்தனர். அவர்கள் மலைகளும் கோட்டைகளும் கொண்ட சிறுசிறு நிலப்பகுதிகளை அரசாண்டனர். இவர்கள் பேரரசர்களுக்குத் துணையாக வலிமை சேர்த்தது மட்டுமல்லாமல் மூவேந்தர்களை எதிர்த்து வென்று தங்களைக் கதந்திரமாக்கிக் கொண்டு தனியாட்சி செய்ததும் உண்டு.

ஆசியாவின் மத்திய பீடபூமிக்குத் தெற்கிலுள்ள பகுதிமுழுவதும் முன்னாட்களில் 'சம்புத்தீவு' அல்லது 'நாவலந்தீவு' என்று அழைக்கப்பட்டது. நாவல்மரங்கள் அந்நிலத்தில் மிகுதியாய் இருந்ததன் காரணமாக இப்பெயர் ஏற்பட்டிருக்கலாம் என்பர். இந்நாவலந்தீவு குறித்து தமிழ் இலக்கியங்களில்,

“நாவலந் தண்டுபொழில் வடபொழில் ஆயிடை” (பரி. 8)

“நாவலந் தண்டுபொழில் வீவின்று விளங்க” (பெ.பா.ப.465)

“நாவலந் தண்டுபொழில் மன்னர்” (சிலம்பு. 17:3)

என இடம்பெற்றுள்ளது. இவற்றிலிருந்து பண்டைக்காலத்தில் தமிழகம் நாவலந்தண்பொழில் என அழைக்கப் பெற்றமை உறுதியாகிறது.

இந்தியாவை இயற்கை அமைப்பின் அடிப்படையில் விந்திய மலைக்கு வடக்கிலுள்ள பகுதியை வடஇந்தியா என்றும் தெற்கிலுள்ள பகுதியை தென்னிந்தியா என்றும் இருபெரும் பிரிவுகளாக பிரித்துள்ளனர். “இந்நாவலந்தீவில் விந்திய மலைக்குத் தெற்கிலுள்ள பகுதி தட்சிணாபாதம் அல்லது தென்னாடு என்றும் அதன் தென்கோடியில் தமிழர் வாழும் இடம் தமிழகம் என்றும் அழைக்கப்பெற்றது.” அதாவது “தென்னிந்தியா முழுவதும் சங்ககாலத்தில் தமிழ்நாடாக இருந்துவந்தது.”

தமிழகம் குறித்து நன்கு தெரிந்து கொள்ள இன்று கிடைத்திருக்கும் முதன்மை ஆதாரங்கள் தொல்காப்பியமும் பழந்தமிழ் இலக்கியங்களும்.

இரங்கலும் இரங்கல் நிமித்தமும்



ஆன்சியோள்



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இரங்கலும் இரங்கல் நிமித்தமும்

காதல்

காலங்கள் மாறிப் போகலாம்
ஆசைகள் தீர்ந்து போகலாம்
அழகு மறைந்து போகலாம்
ஆனால்....

உண்மையான அன்பு என்றும் மாறாது.

நான் ஒருவரிடம்
தாழ்ந்து போகிறேன் என்றால்
அது....

அவர் மீது கொண்ட அதீத அன்பு
காரணமாக மட்டுமே.





நெய்தலின் வாடிவாங்கல்

முனைவர். சி. ஆன்சி. மோள்





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தமிழ்ப் புறம்பு

'ஆர்' கருத்தரங்கக் கட்டுரைத் தொகுப்பு



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சங்க இலக்கியங்களுள் நெய்தல் தாவரங்கள்

முனைவர் **சி. ஆன்சி மோள்,**
தலைவர், தமிழ்த்துறை (சுயநடவ),
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முன்னுரை

சங்க கால மக்கள் தங்கள் வாழ்க்கைத் தளங்களைக் குறிஞ்சி, முல்லை, மருதம், நெய்தல், பாலை என ஐவகை நிலங்களாகப் பாகுபாடு செய்து கொண்டு அந்தந்த நிலங்களின் பின் புலங்களுக்குத் தக்கவாறு தங்களது வாழ்க்கை முறைகளையும் தொழில்களையும் அமைத்துக் கொண்டு வாழ்ந்தனர். கடலும் கடல் சார்ந்த இடம் நெய்தல் திணையாகும். இந்நிலத்திலுள்ள தாவரங்களின் தன்மைகளையும், சிறப்புகளையும் பற்றி இக்கட்டுரை எடுத்துரைக்கிறது. நிலவாழ் தாவரங்கள்

தாவரம் என்பது இடம்விட்டு இடம் பெயராது நிலைத்த தன்மை கொண்டது, நிலத்திலோ, நீரிலோ வேர்விட்டு தண்டு, கிளை, இலைகளுடன் காணப்படும் என்று தமிழகராதி விளக்கம் அளிக்கிறது. நிலத்தாவரங்கள் கொடி வகை, மரம்வகை, செடிவகை, புதர் வகை, புல் வகை என ஐந்தாகப் பிரிக்கப்படுகின்றன. நெய்தல் நிலத் தாவரங்கள் கடற்கரையோர உப்பங்கழிகளில் மிகுதியாக மலருகின்றன.

நெய்தல் பூ

நெய்தல் பூ கடற்கரை ஓரங்களில் மிகுதியாக மலரும் மலராகும். இது நன்னீர்மலர், உவர்நீர் மலர் என இருவகைப்படும். நன்னீர்மலரை நீர்நிலை மலர், வயல்வெளி மலர் எனப் பகுப்பர்.

“நீள் நறு நெய்தல்” என்று குறிஞ்சிப்பாட்டு நன்னீர் மலரினைக் குறிப்பிடுகிறது.

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இம்மலர் பெரும்பாலும் கடற்கரைக் கழிகளில் வளரும் தாவரம் இம்மலர் கண்ணுக்கு உவமையாகக் காட்டப்படுகிறது. வைகறையில் மலரும் புல்லிய அலங்கு இதழ்களைக் கொண்டது. உப்பங்கழியில்



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அன்றில் முற்றம்

பொருள்
மகளிர் சிறுகதைத் தொகுப்பு

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இதயத்தின் கீறல்

சி. ஆன்சிமோள்,
குளச்சல்.

20

புத்தம் புதிய ஆடையில் பிறந்த நாள் கொண்டாடும் சிறுமி கயல் அங்குமிங்கும் ஓடிக் கொண்டிருந்தாள். தன் தாயின் சோக முகம் கண்டு ஓடோடி வந்தாள். "அம்மா ஏம்மா ஒரு மாதிரி இருக்கீங்க? ஏம்மா பேசாம இருக்கீங்க? சொல்லுங்கம்மா? அடுக்கிக் கொண்டே போனாள். "அது ஒண்ணுமில்லை நீ--நீ போய் விளையாடு என்று சொல்லி மழுப்பினாள் கயலின் தாய் மேரி.

"இல்லை நீங்க எதையோ மறைக்கீங்க அப்பா இல்லை என்ற கவலையாம்மா?" என்று மீனா முடிப்பதற்குள் "இல்லடா கண்ணு... ஒண்ணுமில்லை... உன் பிரண்ட்ஸ் எல்லாம் வராங்க போய்ப்பாரு! என்று அனுப்பினாள்.

அனைவரும் ஹேப்பி பர்ட்டே பாடல் பாட அந்த 10 வயது மொட்டு கயல் கேக்கை வெட்டி தனது தாய் மேரிக்கு ஊட்டினாள். மேரியும் பொறுத்துக் கொள்ள முடியவில்லை. அவளது அறையை நோக்கி ஓடினாள்



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L'ENSEIGNEMENT HYBRIDE COMME AVENIR DE L'ÉDUCATION

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Résumé

L'apprentissage hybride est la dernière tendance en cours pour éduquer la communauté étudiante en combinant des aspects de l'enseignement en personne et en ligne. Il est mis en œuvre pour synchroniser l'enseignement en personne et en ligne simultanément, ce qui se produit à la fois physiquement et à distance. Le plus grand défi consiste à maintenir à la fois les étudiants présents physiquement en classe et les étudiants apprenant à distance engagés afin de fournir une expérience d'apprentissage équitable. Ce document met l'accent sur un aperçu détaillé de l'apprentissage hybride.

Mots-Clés

Apprentissage en classe, Apprentissage hybride, Enseignement en ligne, Communauté étudiante, Processus d'enseignement-apprentissage

Introduction

L'apprentissage hybride diffère de l'enseignement en classe traditionnel et transforme la manière dont l'éducation est dispensée à l'ère moderne. Le concept d'apprentissage hybride est largement défini comme un apprentissage synchrone qui combine l'enseignement en personne et à distance simultanément. Les éducateurs doivent surmonter les obligations d'enseignement en analysant attentivement les difficultés auxquelles sont confrontés les étudiants présents physiquement en classe et les étudiants apprenant à distance en mode virtuel. L'apprentissage hybride implique l'utilisation de divers outils en ligne tels que la visioconférence, les logiciels de test et d'enseignement. Il comprend également un apprentissage asynchrone tel que des exercices en ligne et des vidéos d'instruction. Les cours sont dispensés en ligne et hors ligne et les apprenants peuvent choisir le mode d'apprentissage. Ils ont accès à des documents d'étude en ligne et ils bénéficient de l'autonomie en choisissant leur mode d'étude.

Apprentissage hybride vs Apprentissage mixte

Les termes «apprentissage hybride» et «apprentissage mixte» sont utilisés de manière synonyme car les deux modèles partagent plus de similitudes. Cependant, ce sont deux modèles pédagogiques distincts. L'apprentissage mixte combine le mode d'instruction traditionnel et l'apprentissage asynchrone, où les apprenants réalisent des travaux en ligne et regardent des vidéos pédagogiques à leur propre rythme. En revanche, l'apprentissage hybride est un modèle d'instruction dans lequel les enseignants enseignent à la fois aux apprenants en personne et aux apprenants à distance en même temps.

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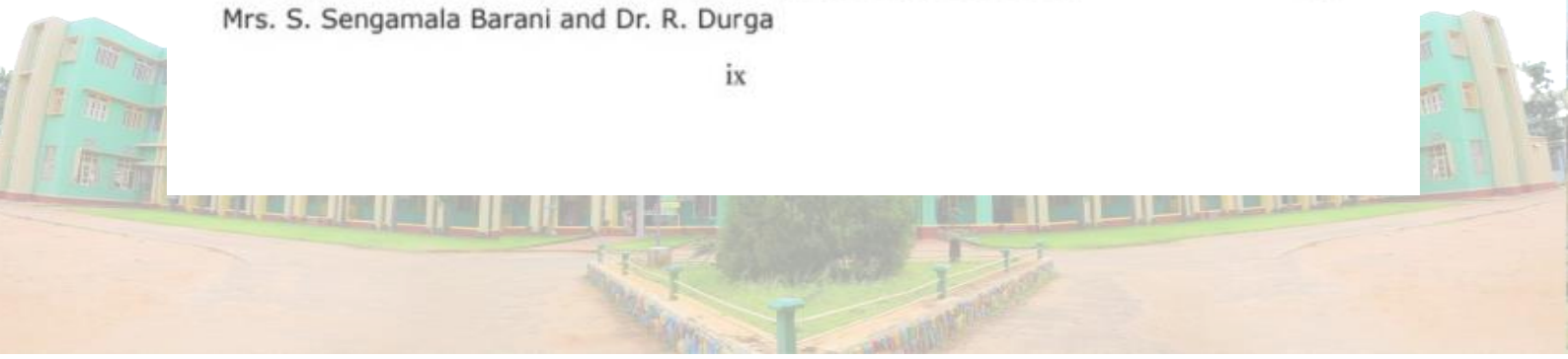
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THE FUTURE OF EDUCATION: EMBRACING HYBRID TEACHING FOR ENHANCED LEARNING EXPERIENCES

Mrs. P.T. ANBU HANNAH DORA

Associate Professor, Department Of Fren

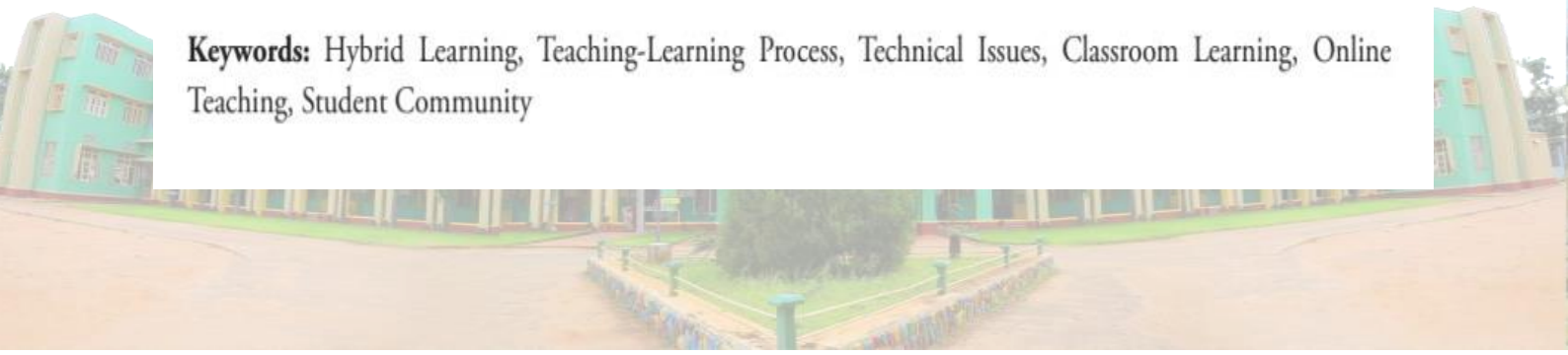
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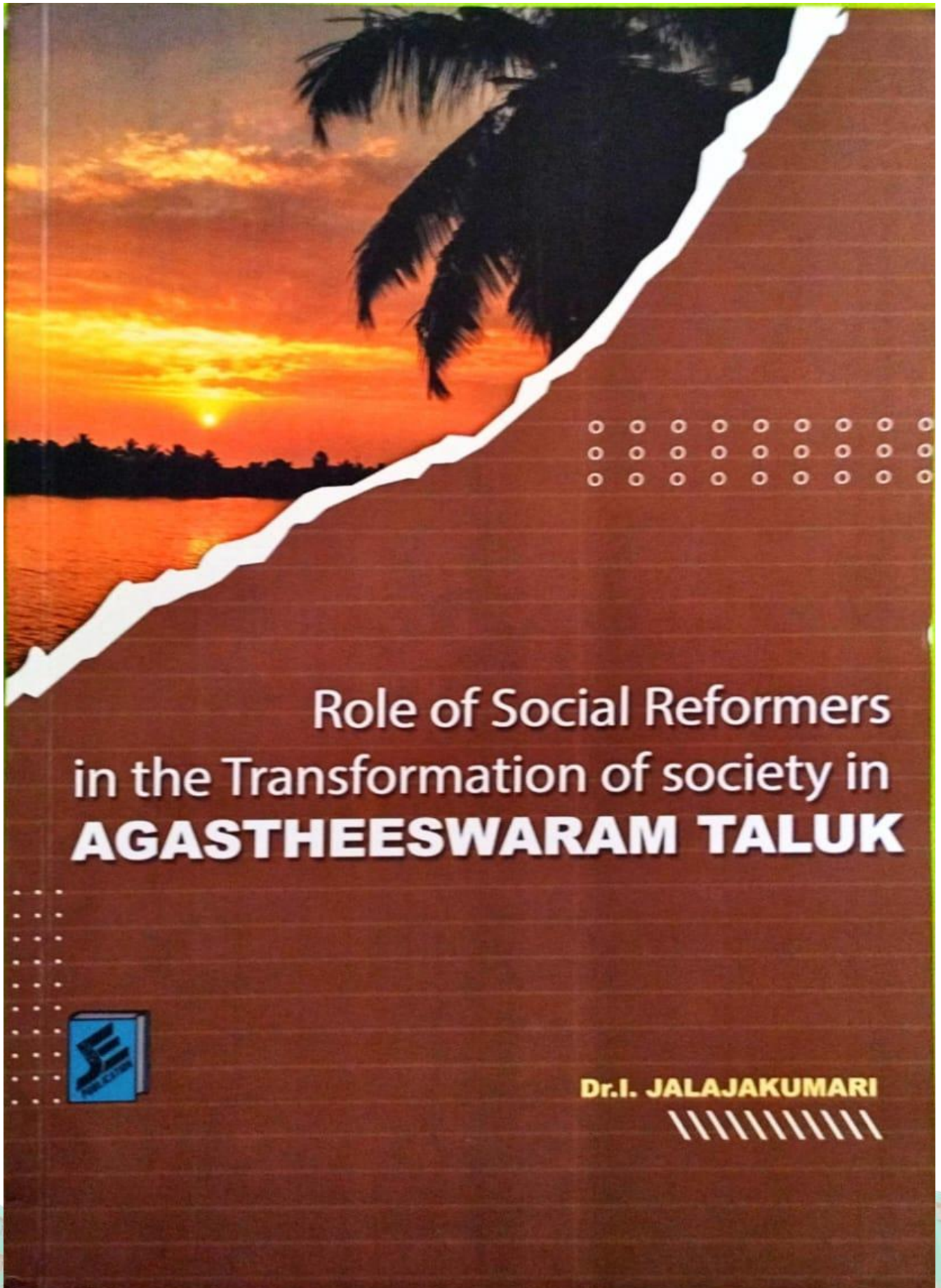
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ABSTRACT

Hybrid learning is the latest ongoing trend to educate the student community by combining major aspects of classroom and online teaching. It is implemented to synchronize in-person and online teaching simultaneously which happens both physically and remotely. It creates an environment to make the teaching and learning process more flexible for a complete understanding of the education instructional strategies. It differs from the traditional teaching strategies having its own advantages and disadvantages. The learner may find it challenging with the disruption of digital technologies and divergence from the traditional classroom in-person teaching methods. The distraction due to technical issues not only hinders the learning of the individual but also the learning of other students in the crew. The range of different technical issues faced by remote learners varies from sound problems or difficulties connecting to a live stream, to more complex issues with their computers or an inability to use software that is judicious to the course. Depending on the severity of the technical issues, it is almost impossible to obtain a good learning experience. It is difficult to interpret the best combination that addresses what is being taught, where, by whom, and to whom. It is also critical for teachers to transform from classroom teaching to build digital skills, pedagogical effectiveness, or the ability to identify the suitability of different forms of hybrid learning depending on the context. The challenge is to keep both the students who are physically present in the classroom and the students learning remotely engaged in order to deliver an equal learning experience.

Keywords: Hybrid Learning, Teaching-Learning Process, Technical Issues, Classroom Learning, Online Teaching, Student Community





Role of Social Reformers
in the Transformation of society in
AGASTHEESWARAM TALUK



Dr. I. JALAJAKUMARI



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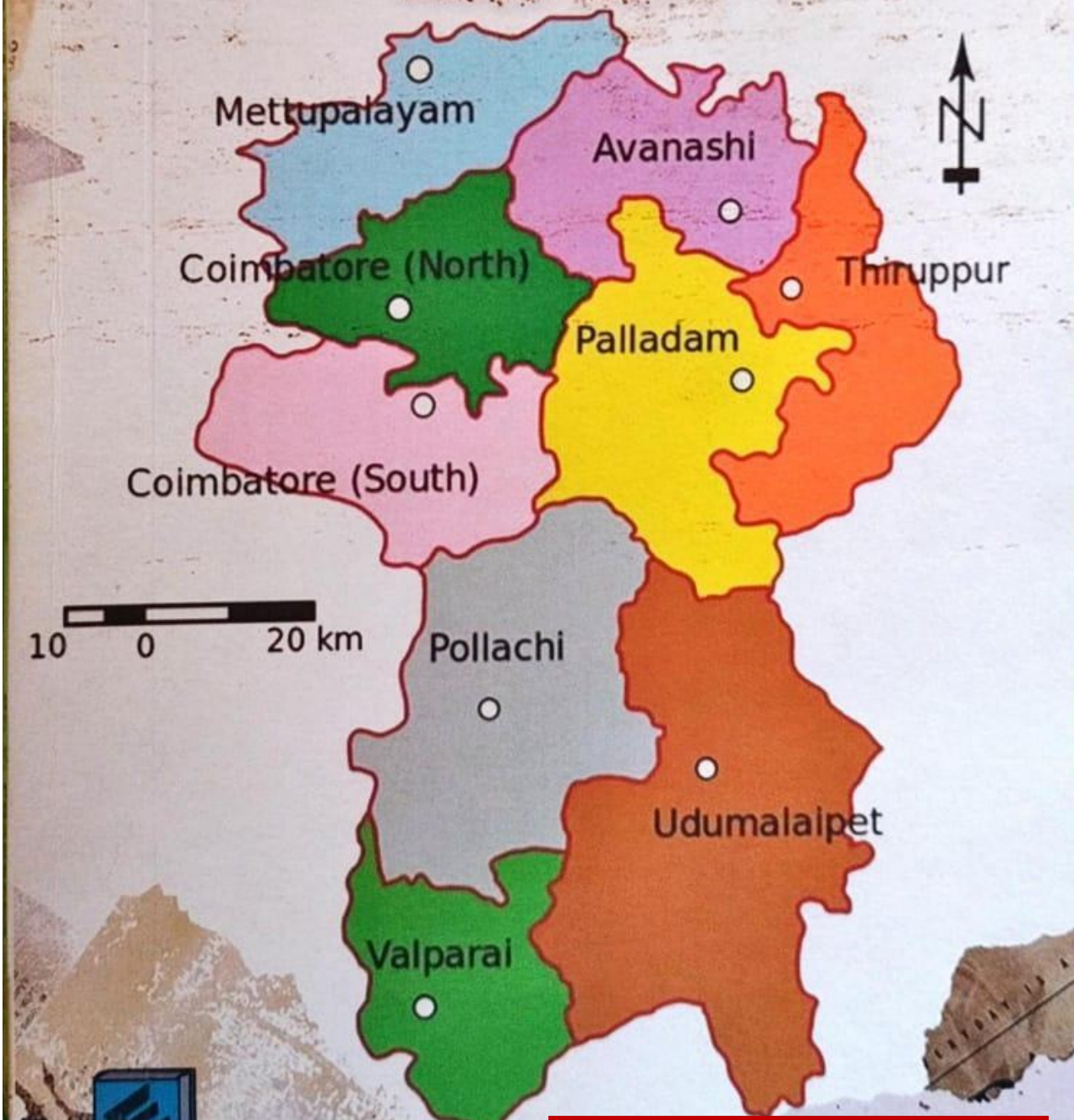
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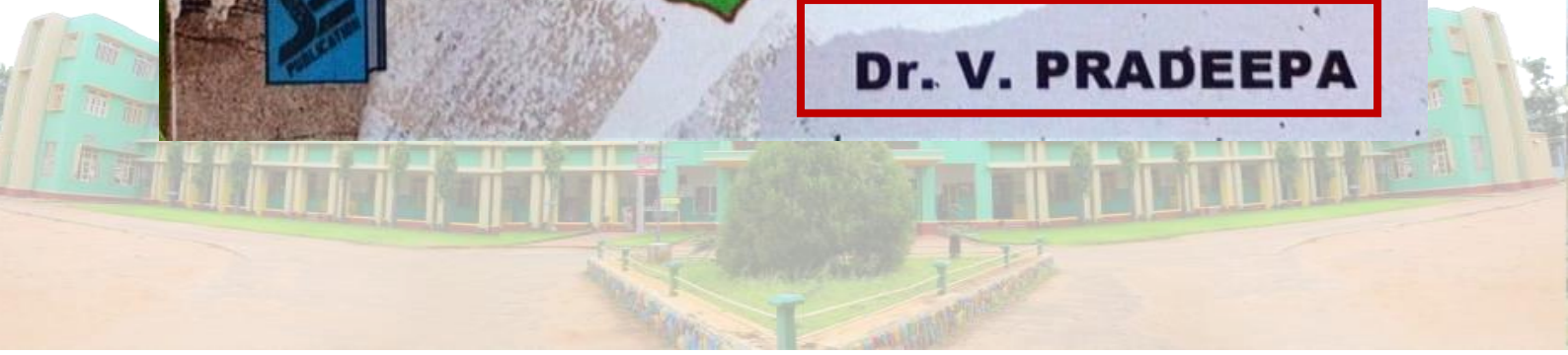
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SOCIO ECONOMIC LIFE OF INTERNAL IMMIGRANTS IN KONGU REGION



Dr. V. PRADEEPA



This book entitled SOCIO ECONOMIC LIFE OF INTERNAL IMMIGRANTS IN KONGU REGION is authored by Dr.V. Pradeepa, Assistant Professor of History, Holy Cross College (Autonomous) Nagercoil. This book gives Kongu Region in Tamil Nadu is gifted with various internal immigration activities. The socio-economic disabilities enforced vigorously towards the labelled migrant communities of this region. The cultural activities have a unifying force among the people whether they are majority. Therefore the internal immigrants as well as the Tamils take part in cultural activities without any discrimination. Many of the festivals they celebrate are much of antiquity. The internal immigrants with Tamils celebrate Pongal,Deewali,Nawarathi,Christmas,Onam,Ramzan etc. with much pomp and pleasure. These festivals impart the value of unity among the people. In the urban areas, they instil in them in the sense of oneness and promote equality. During the festival occasion they jointly participate the arts forms like Kolatam, Kummi,Mayilattam, Karaka tam etc. and prepare the various kinds of sweets (Kolukattai, Pongal, Biriyani,Cake) without any caste, creed or any kinds of discrimination. Thus the people of Kongu region lived much harmoniously and bonded with culturally. I appreciate the author for this pioneer work and I hope this book will cater the needs of the readers.



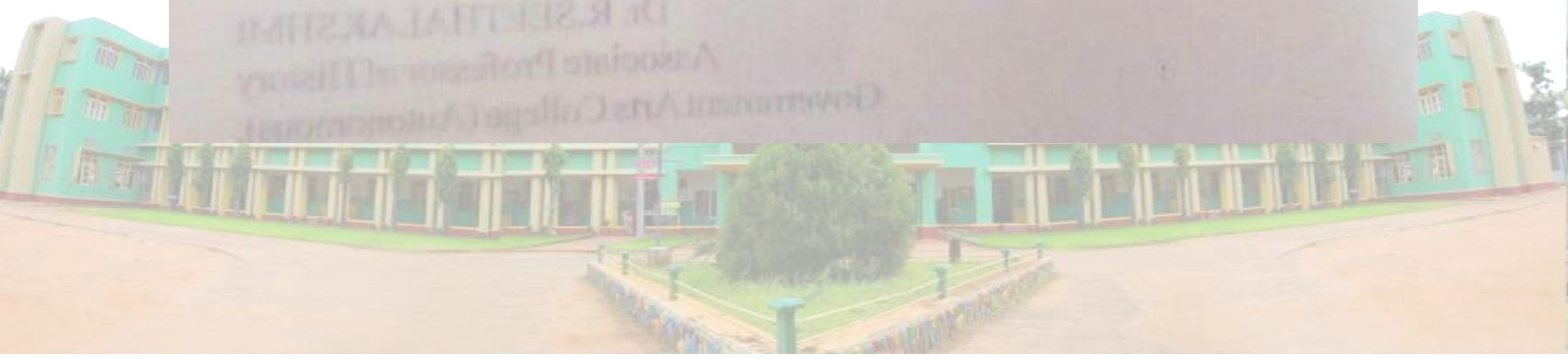
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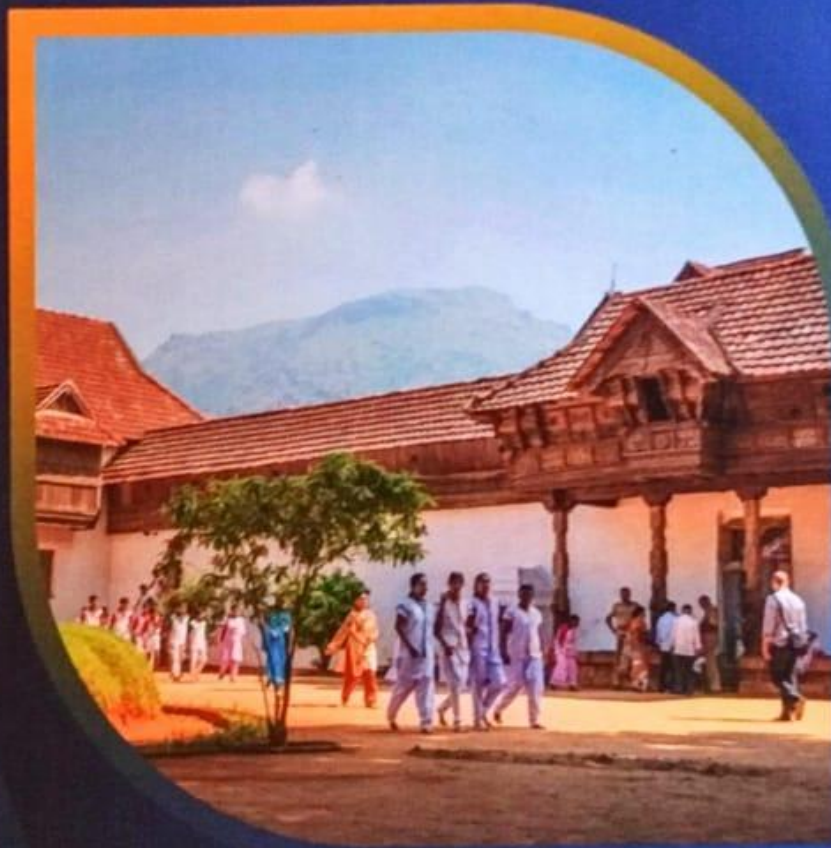
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A JOURNEY INTO THE LIVES OF MALAYALEES IN KANYAKUMARI DISTRICT



Dr. K.S. SOUMYA

About the book

Book Name : **A JOURNEY INTO THE LIVES OF MALAYALEES IN
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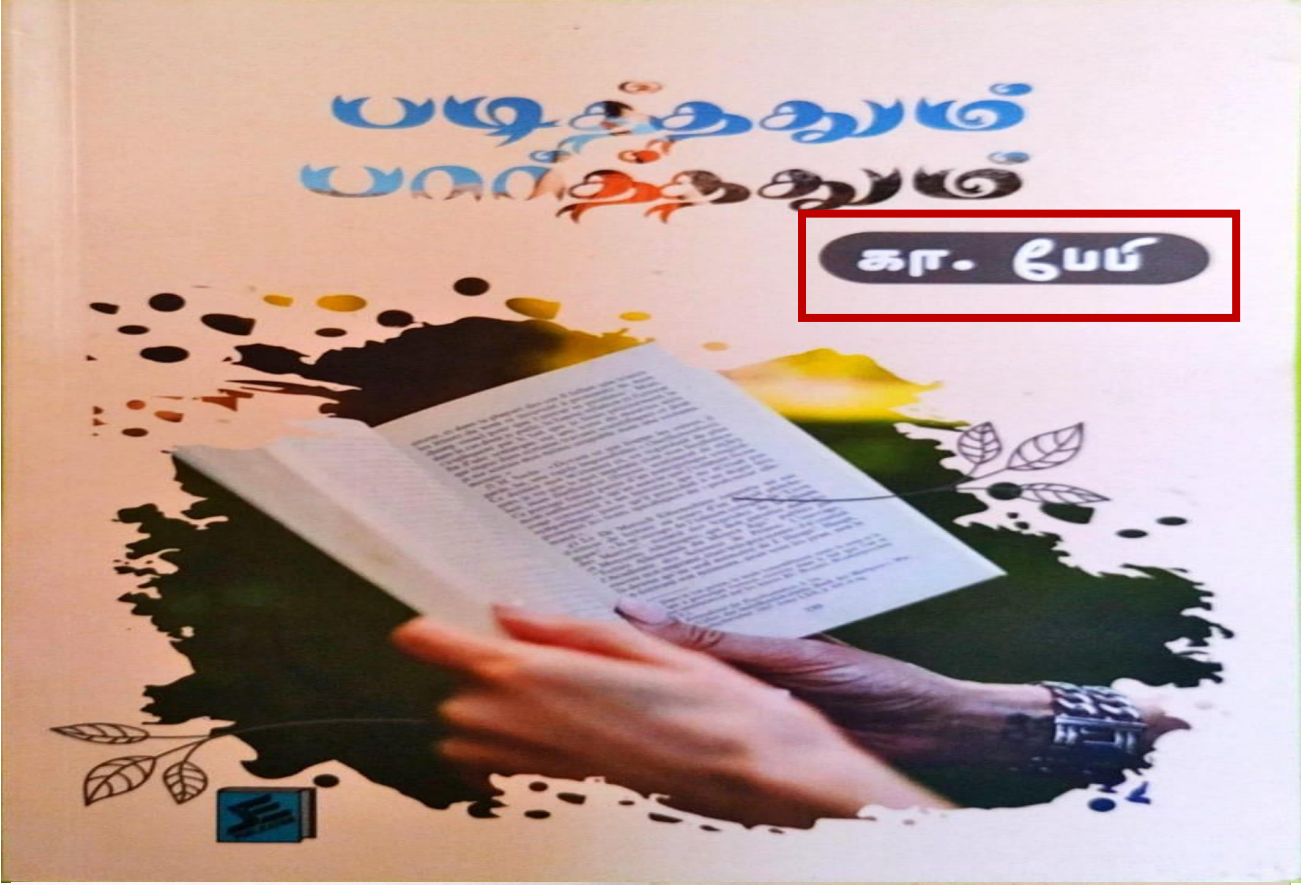
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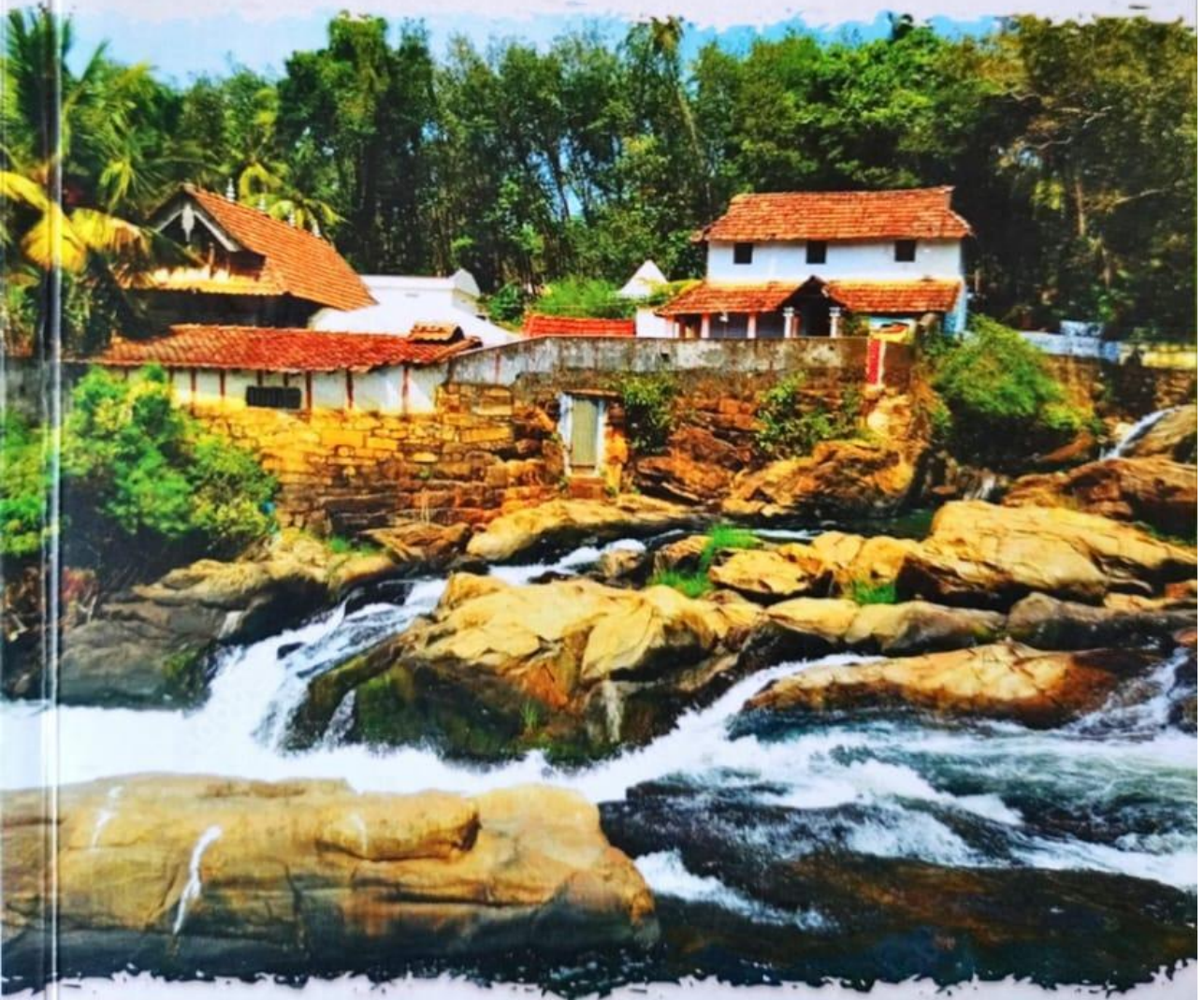
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Thiruvattar

A Metropolitan Centre in

South Travancore



Dr.R. SUJI



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Dr. S. MARY JUDIT



About the author

This book entitled NATIONAL MOVEMENT IN INDIA is authored by Dr.S. Mary Judit, Assistant Professor of History, Holy Cross College (Autonomous) Nagercoil. This book is an attempt to highlight the National Movement of various social groups, classes, and regions. The introduction provides a broad historical outline of the nationalist movement in the post-1857 period and analyses its various complexities and internal contradictions. The introduction of the Indian National Movement helped to spread the feeling of Nationalism all over the country and to attain Indian Independence. I hope this pioneer work will cater the needs of the readers.

-JE Publication



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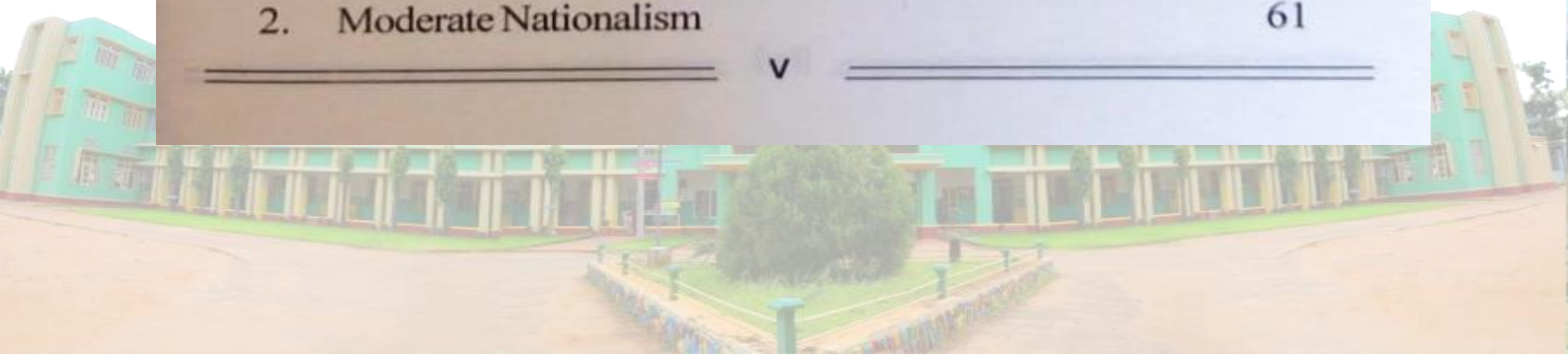
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அன்னை தெரசாஷன் அரும்பணிகள்



Dr. S. மேரி ஜீடர்



பேராசிரியர் திருமதி மேரி ஜலிதர் அவர்களின் “புனித அன்னை தெரசாவின் அரும்பணிகள்” என்னும் இந்நூலில் ஆறு அத்தியாயங்களில் தனது சிந்தனைகளை பதிவு செய்துள்ளார். இந்நூல் வழியாக சமூகப்பணி ஆற்றி வரும் எல்லா மனிதர்களுக்கும் தன்னுடைய சீரிய எழுத்துக்களால் விழிப்பை ஊட்டி, அவர்கள் சிகரம் நோக்கி சிறகுகள் விரிக்க, வருங்கால தலைமுறைகளை சமூகப்பணியிலும், பிறரன்பு சேவையிலும் ஆழப்படுத்த சிந்திக்க அழைப்பதோடு மட்டுமில்லாமல், இந்நூல் ஒரு வழிகாட்டிகையேடாகவும் அமையும். படித்து பாருங்கள் பயனடைவீர்கள்.

அருட்பணி. ஜாண் பெனிட்டோ
அனைத்து பள்ளிகளின் கண்காணிப்பாளர்
கோட்டாறு

பதிப்பகத்திலிருந்து...

தாய்மை என்று சொல்லும் போதே மனதிற்கு எப்பொழுதும் ஆனந்தமே. அதிலும் துறவறத்தில் உள்ளவர்கள் தாய்மை குணத்தை வெளிப்படுத்துவது என்பது போற்றுதற்குரியது. பார்க்கும் முகங்களில் இறைச்சாயல் கண்டு, அண்டிவரும் மனிதர்களுக்கு இல்லை என்று சொல்லாது, ஆறுதல் தேடிவருபவர்களுக்குத் தோள்தட்டி ஆறுதல் சொல்வது என்பது காலத்தின் தேவை, கட்டாயம். அதை இந்த மண்ணகத்தில் விதைத்துச் சென்றவர்தான் புனித அன்னை தெரசாள். அவரின் அரும்பெரும் வாழ்க்கைப் பாடத்தைச் சுமந்து வருவதுதான் ‘புனித அன்னை தெரசாவின் அரும்பணிகள்’ என்ற புத்தகம்.

ஆசிரியர் திருமதி மேரி ஜலிதர் அவர்களின் முதல் புத்தகமான ‘புனித அன்னை தெரசாவின் அரும்பணிகள்’ என்ற புத்தகத்தை அசிசி பதிப்பகத்தின் சார்பாக வெளியிடுவதில் மகிழ்ச்சி அடைகின்றேன். அதிலும் அவரின் முதல் படைப்பே தாய்மையின் பேறுபலன்களைச் சுமந்து வருவதை நினைத்து உளம் மகிழ்கின்றேன். ‘தாய் இல்லாமல் நான் இல்லை’ என்ற வார்த்தையும், ‘தாயிற் சிறந்த கோவிலுமில்லை’ என்ற வார்த்தையும் தாய்மையைப் போற்றும் பதங்கள் என்பது யாவரும் அறிந்த ஒன்று. அப்படிப்பட்ட தாய்மைக்குச் சிறந்த எடுத்துக்காட்டு பூமியின் தேவதை என்று எல்லோராலும் போற்றப்பட்ட புனித அன்னை தெரசா.

அருட்பணி. ஜார்ஜ் கிளமண்ட்
மேலாளர், அசிசி பதிப்பகம்



அசிசி பதிப்பகம்
நாகர்கோவில்



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Srilankan Refugees in the Rehabilitation Centres in Kanyakumari District

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Abstract

Refugees are people who have fled from their motherland because of war, ethnic conflict and personal danger. They are extremely displaced people with a well-founded fear of persecution in their countries on the basis of race, religion, nationality, political beliefs and unable to return to their own countries. Ceylon Tamils, from time immemorial, were the original inhabitants of Ceylon and India. Britishers also brought the Indian Tamils to Sri Lanka from the south Indian state of Tamil Nadu to work in rubber, tea and coffee plantation mainly as labourers. At that time Indian Tamils has enjoyed all civil rights including voting rights. But Sinhalese formed the majority in the Ceylon Society, they feared the Tamils may overcome the Sinhalese in their own soil. In the meanwhile, the government enacted New Citizenship Act No.18 of 1948 and No.3 of 1965 designed to deny citizenships and voting right to the Indian Tamils. As a result of Citizenship Act, the Tamil Women had lost their earlier voting right. The Lankan Tamils were in better position than Sinhalese in the field of Employment and university education before and after independence. During the election of 1956, Sinhalese majority people began to complain to the then government and discriminated against the minority Tamils in their own country in the field of higher education and in the government employment sector. The question of Sinhalese as Official Language Act also made many Ceylon Tamils including women to quit the job. The serious problems mounted the pressure and created the civil war. So they created unnecessary problems to start the civil war in 1983. This paved the way for the Tamils women to migrate to India as refugees.

Introduction:

Sri Lankan Tamils who came to Tamil Nadu as refugees who lost their property during the civil war in Sri Lanka. There are two types of Tamils in Sri Lanka 1. Native Tamils 2. Hill Tamils who were taken from Tamil Nadu during the British rule to develop and maintain tea plantations in the hilly areas of Sri Lanka. But when the hill Tamils dominated the Tamil origins, there arose the problem that ended with civil wars.

In Kanyakumari District there are four active refugee camps namely Perumalpuram, PazhavilaiGnaranvilai and Kozhivilai. Perumal Puram refugee camp, to located in Agastheeswaram Taluk, it has 542 peoples, Pazhavilai has 211 people, Gnaranvilai has 125 peoples and Kozhivilai has 320 people. The Srilankan refugees are protected by the Tamil Nadu government under various schemes.

Objectives of the Study:

The article entitled, Sri Lankan Refugees in the Rehabilitation Centres in Kanyakumari District with Special Reference to Women and Children, is very much helped to understand various things related to Sri Lankan Refugees in Kanyakumari District.

- To analyse the causes and the various phases of the arrival of Sri Lankan refugees in Tamil Nadu, Specifically in Kanyakumari District.



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Pallava Architecture – A Historical Perspective

I. Jalaja Kumari

Department of History, Holy Cross College (Autonomous), Nagercoil.

Abstract

Art is the handmaid of religion. A large number of temples were constructed all over the South. Temple construction was known to the Tamils in several generations prior to Pallavas period. The Pallavas of Kanchi excavated a series of about thirty four cave temples in hard granite. So far as the plan is concerned, the cave temple of Mahendra's time may be divided into three categories. The history of architecture and sculpture in South India begins with the Pallava temples which introduced a new technique called the Dravidian style. In addition to the temples known as the seven Pagodas or Rathas of Mamallapuram are built in this style which may justly be called the Pallava style of art. In fact, Pallava contribution to Indian culture is unique their edifices are among the noblest monuments in South India. The caves and structural temples and other architectural remains of the Pallavas form an important chapter in Hindu art.

Key words: Architecture, Pallavas, Mandapas, Rathas, Pillars, Style, Monuments, South India.

Introduction:

Pallava period is notable in the history of Tamil Nadu. The Pallavas ruled from sixth Centuries to Ninth Centuries. The Pallava dynasty counted several kings who were not only brave warriors but also liberal patrons of art and learning. The Pallava School of art and sculpture is one of the most interesting Indian schools of art. But the history of architecture and sculpture in South India begins with Pallava temples which introduced a new technique called the Dravidian Style. Simavishnu was the founder of pallava dynasty. The Pallava age was an age of art and architecture. According to Prof. K.A.NeelaKantaSastri, the Pallava architecture and sculpture constituted a most brilliant chapter in the history of south India. For the construction of temples the Pallavas used imperishable materials like rock stone and timber etc. In fact, Pallava contribution to Indian culture is unique. Undoubtedly, their edifices are among the boblest monuments in South India. The Pallava architecture has two phases: Rock – Cut architecture from 610 -690; it includes Mandapas or Rathas. Structural from 690 – 900; it includes temples, A Mandapa is an open Pavilion, a hall with cells in the back wall. It is excavated in a rock. A Ratha is monolithic shrine. Many of the architural productions of the Pallavas have figure of lion on the prominent place. This heraldic bease was made to serve as a symbol of the Pallava Simhavishnuorlion (Simha) ancestry.

The temple architecture of the Pallavas divided into two categories namely Rock- Cut and Structural. Rock cut temples were further divided into two *Rathas (Monolithic Shrines)* and *Mandapas (Pillared Halls)*. Structural temples again divided into *Rajasimha* and *Aparajitha* style.

The Pallava Monuments at Mamallapuram:

The town of Mahabalipuram or Mamallapuram, about 50 kilometers south of Madras, founded by the great Pallava King Narsimha Varman (625 – 645 AD) on the sea beach, has many Pallava monuments which can be classified in four groups:



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Life of Kaani Women in Kanyakumari District

K.S. Soumya

Department of History, Holy Cross College, Nagercoil

Abstract

The aim of this article is to highlight the life of Kaani women in kanyakumari District. The life status of Kaani women is not satisfactory. Diversity of horticultural important crop are scattered throughout the green vegetation of Kaani people. Horticulture education and training can help the Kaani women to be self-sufficient through placement in different government or private instructions or through self-employment scheme. Kaani women also may be nutritionally and medically more secure through horticulture education. Society also may be gainer from their service in different aspect. The majority of feminist literature on the states of women asserts that in comparison to women in other countries, they are relatively well positioned as a result of nearly six decades of states social programs with the provisions of universal education, health care and food subsidies.

Key words: Kaani woman, Socio Economic condition, Marinara, Self Help Groups, Kaani Society

Introduction

Kaani societies are said to have no special preference or prejudice against women. Thought there are clear differences between the roles of men and women in some spheres of tribal life the status of women cannot be said to be low on every count. Women have an important place in kaani society. Though the term status of women does not have a very clear cut for specific definition it is basically related to women's roles as well as performance in important areas of social and economic.

'Kaani' means 'owner of the land. In the ancient period, the 'kaanis' were called "Malai Arasar" which means kings of the forest. Most of the trick forests were under their control. They lived in small huts, made up of wood, mud, and grass. It contains only limited facilities. The Kannikaran, who call themselves kaanikkar and kaanikarar. There are 48 kaani settlements in Kanyakumari district Women is called kanikkaree. The Kaani women are generally dwarf and small in size. They are straight forward, truthful and open-hearted. They are usually helpful to the new visitors of the forest. Women wear marinara inside the house covering breast to the feet They don't use foot wears women put up dress after the age of 14 women use blouse above waist and dhotis below waist. Both men and women wear car studs made of brass or silver.

A family consists of husband, wife and children. The wife enjoys equal status with her husband. Both sit and chat together. Both eat together from the same lead or separately. Both go out for food gathering. Agriculture is the chief occupation of the kaani. Now the trouble woman is empowering gradually in all the fields. Likewise, in the economical side also they powered to some extent. The woman is undergoing a lot of self-employment such as tapping, cleaning the words from the forest goat, hen, honeybee rearing, getting fuel wood forest, tailoring, growing, valuable things like pepper and the like.

The educational status of Kaani women were very poor. The government construct number of school for the tribes. They went up to school education only. They did not appear for higher education. There are a number of schools but the enrolment number is comparatively less among the girls. Instead



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ஹோலி கிராஸ் கல்லூரியின் கல்வெட்டுத் தொகுப்பு - ஓர் கள ஆய்வு

ச. சலோமி எல்னா
மூன்றாம் ஆண்டு இளங்கலை வரலாறு திருச்சிலுவை கல்லூரி நாகர்கோவில்
சா. திரேஸ் மென்சி
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சா. ரெஜி
உதவிப்பேராசிரியை, வரலாற்று துறை திருச்சிலுவை கல்லூரி (தன்னாட்சி) நாகர்கோவில்

முன்னுரை

1965 ஆம் ஆண்டு கன்னியாகுமரி மாவட்டத்தின் முதலாவது மகளிர் கல்லூரி தற்போது 58 ஆண்டுகளை வெற்றியுடன் நிறைவு செய்கிறது எம் ஹோலி கிராஸ் கல்லூரி. கல்லூரியின் வரலாற்றை கல்வெட்டு ஆதாரத்துடன் கள ஆய்வு செய்து தொகுத்து தருவதே இக்கட்டுரையின் அடிப்படை நோக்கமாகும்.

கல்லூரியின் வரலாறு:

நாகர்கோவில் ஹோலி கிராஸ் கல்லூரி(தன்னாட்சி) ஒரு கத்தோலிக்க கல்லூரி. சாவனோடி ஹோலி கிராஸ் அருட் சகோதரி சபையால் நிறுவப்பட்டு நிர்வகிக்கப்படுகிறது. இந்தக் கல்லூரி கோத்தாரின் கத்தோலிக்க பிஷப்பின் மத அதிகார வரம்பிற்கு உட்பட்டது.

ஹோலி கிராஸ் கல்லூரி கன்னியாகுமரி மாவட்டத்தின் முதல் மகளிர் கல்லூரி. இரண்டு ஆகஸ்ட் 1965 இல் தொடங்கப்பட்டது. கல்லூரி வளாகம் பெரிய விளையாட்டு மைதானங்கள் மற்றும் கட்டிடங்களுடன் சுமார் 20 ஏக்கர் பரப்பளவைக் கொண்டுள்ளது. கன்னியாகுமரி மாவட்டத்தில் பிரத்தியேகமான மகளிர் கல்லூரியை உருவாக்குவதற்கான அவசர தேவையை கோட்டாறு மறை மாவட்ட ஆயர் ரோசுஅக்னிஸ்வாமி கண்டறிந்தார். இந்த முன்மொழிவுக்கு அப்போதைய திருச்சிலுவை சபையின் தலைமை அருட்சகோதரி இவ்வான் லாவொரல்(பிரான்ஸ்) சாதகமாக பதில் அளித்தார். அப்போதைய திருச்சி மாகாண மதர் மேரி சிசிலி லியோனட் தனது அர்ப்பணிப்பு உள்ள சகோதரிகளுடன் சேர்ந்து கடுமையான நிதி நெருக்கடிகள் மற்றும் பிற கடுமையான இடர்பாடுகளையும் மீறி இந்த சிறந்த நிறுவனத்தை நிறுவினார்கள்.



Temple Culture in Tamilnadu through the Ages

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Dr. M. Kala



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CONTRIBUTIONS OF MARATHAS TO THE TEMPLE ARCHITECTURE

Dr. I. Jalaja Kumari

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Abstract

The Marathas of Thanjavur had adopted their own style of construction and they had renovated the Nayak buildings. They followed the 'Indo-Sarasanic Style'. Some of the buildings of the Marathas show that Hindu architecture was influenced by the Muslim style. Indo - Islamic art was possibly due to the Hindu kings adopting the techniques of Islamic tradition. Islamic art or Mughal style was also followed in some forms in the Hindu pattern as is visible in honeycombed, half-domed minaret. The temples, Mosques, Miners, Minarets and churches constructed by the Marathas proves their policy of secularism. Thanjavur was famous for religious art with architectural lavishness and iconographical extravagance. There are about thirty buildings within the Palace complex intended for various purposes, which are inside the fort. The buildings, which were built in the later period of the Maratha rule, exhibit a considerable amount of European influence in their style. King Serfoji - II followed the English style and with the help of an English engineer Mr. Philips, who was also the political agent of the British in Thanjavur at that time, had designed and executed various parts of the present place.

Keywords: Marathas, Thanjavur, Temples, Palace, Miners, Muslim Style, Buildings, Nayak, Architecture.

Introduction

The study of the Maratha society in its varied aspects will be incomplete, without an assessment of its artistic achievements, as they reveal their cultural movements borne out by the progress of Art and Architecture. The Marathas of Thanjavur had adopted their own style of construction and they had renovated the Nayak buildings. They followed the 'Indo-Sarasanic Style'. Some of the buildings of the Marathas show that Hindu architecture was influenced by the Muslim style. Indo - Islamic art was possibly due to the Hindu kings adopting the techniques of Islamic tradition. Islamic art or Mughal style was also followed in some forms in the Hindu pattern as is visible in honeycombed, half-domed minaret. The pillars and the arches in their buildings are Muslim in character. Apart from the influence of Islam, one can see the English style brought about by their intimate contacts with West.

The temples, Mosques, Miners, Minarets and Churches constructed by the Marathas proves their policy of secularism. Thanjavur was famous for religious art



Temple Culture in Tamilnadu through the Ages

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Dr. M. Kala



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DEVELOPMENT OF JAIN TEMPLES IN TAMIL NADU – A HISTORICAL PERSPECTIVE

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Abstract

Jainism is a system of religion preached by Jinas or conquerors. Jina is one who has subdued the bad feeling of anger and hatred. Mahavira was the chief exponent of Jainism. After his death, his disciples headed the Jain religion. The last head or Sratakevali was Badhrabahu. He was the religious head of Chandra Gupta Mowrya. He visited Mysore and settled Sravana Belagola. He sent his disciple Visakhacharya to the Chola and Pandya Countries, for the propagation of dharma and the spread of Jainism. He enjoyed royal patronage and many inscriptions provide detailed accounts of the assistance given by the rulers for the construction of temples and its maintenance. The land gifted to Jain temples and monasteries were called Pallichandam. Caverns with beds were donated to Jain monks by lay devotees, the Chera Royal family, officers of the Pandyan Kings of the Sangam Age and members of the trading and artisan classes. Likewise, the Chitharal Jain temple also donated by Pallava King Mahendravarman I. The Chitharal Jain monuments called as Chitharal Malai Kail is the ruins of Jain's trading centre. It was also known as "Thirucharanattu Malai". This was located at Chitharal in Kanyakumari District. It was a Jain Temple and later converted into a Hindu temple.

Keywords: Jina - Visakhacharya - Pallichandam - Chitharal Malai Kail - Bhagavati Temple - ardha - padmasana pose - Thirucharayattu malai - ardha-padmasana - Jain ascetics.

Introduction

With the arrival of Badhrabahu in Mysore, the spread of Jainism began. His followers were called Digambaras. Jainism had deep roots in Tamil Nadu. A considerable section of the people of Tamil Nadu were attracted by this faith. It rendered meritorious services for the development of Tamil Literature, Naladiyar, Jivaka Chintamani, Silappadikaram and Kural were the eminent Tamil Jain works. In 476 A. D, a separate Tamil Sangam was organized by Vajranandi to promote Tamil language and to spread Jainism. Kanchi, Karur, Vanchi and Madurai were the important centres of Jainism. Both the male and female followed this religion. It is said Jainism spread to Tamil Nadu during the reign of Senguttuvan, the Chera King.

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GROWTH OF WOMEN EDUCATION IN KANYAKUMARI DISTRICT

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ABSTRACT

Education is considered as a very fundamental and important tool for social and economic improvement. Education of women is seen as a basic human right and crucial input for national development. It considered being a great aspect for the growth of the people as well as society. An educated woman has abilities as well as self-confidence. In Ancient period women enjoyed a respectable status in Tamil Nadu. Many educational institutions were started at the beginning of 19th century. Kanyakumari district ranks first in the state of Tamil Nadu in literacy. The district has a large number of high schools, colleges and technical institutions. The libraries play an important role in providing opportunity for ordinary people to gain knowledge. Education has highlighted social awareness among women both for themselves as well as for their children. According to Mahatma Gandhi, If you educate a man you educate an individual, but if you educate a woman you educate an entire family.

KEY WORDS; Fundamental – Economic improvement – Human right – Institution

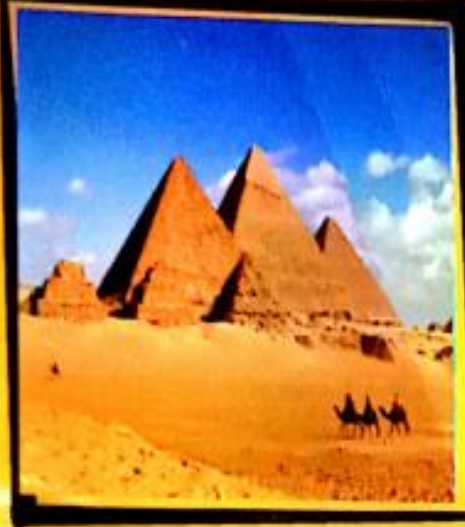
INTRODUCTION

Education is universally regarded as an instrument of improvement in the status of women. It is considered a step ladder for occupational and social mobility. The post-independence period has witnessed a significant improvement in women's education. Education is the most important instrument for human resources development. The women of Tamil Nadu, right from the ancient period enjoy a fairly respectable status in the society. General education is very important not only for men but also for women because it is the education that makes men and women living, interesting, intelligent. Educating women, occupies top priority among various measures taken to improve the status of women. The social reformers worked for the need of female education in India. As a result, many educational institutions were opened in many places. Many educational institutions were started at the beginning of 19th century.



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INITIAL HOMES OF SISTERS OF SACRED HEART OF JESUS AND THEIR GROWTH

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Abstract

The Congregation of the Sisters of the Sacred Heart of Jesus was started as the Little Sisters of Jesus in 1952 at Azhagappapuram. Later it moved to Kurusady in Nagercoil and then to Athipet in Vellore District. In these three places they are having convents and service homes. In this article the scholar has taken steps to study the beginning of these three homes and the selfless services provided by the Sisters of the Sacred Heart of Jesus for the poor and needy.

Key Words:

Congregation –sacrifice -hardships -simplicity- prayer – seed – religious – widows – orphans-poor-need-service.

Introduction:

Mother Scholastica was a great legendary leader who had inspired many people¹. Mother Scholastica was a great lady, who was called by God, started the Congregation of the Sisters of the Sacred Heart of Jesus². In her illness and old age tooshe shows remarkable courage and simplicity, patience and cheerfulness. Her incessant and trusting prayers and her sacrifices have now brought the recognition from Rome for her Congregation³. The seven-Little Sister of Jesus as led by Mother Scholastica had really struggled hard to built up the congregation to the present status as Sisters of the Sacred Heart of Jesus. They Prayerfully laboured to establish their identify among the poor⁴. Mother Scholastica had a very difficult religious journey. Her long waiting in the Augustinian Convent, new turning point in Azhagappapuram, eventual renouncing of many privileges, travel to Kottar Diocese and finally the invitation to Vellore are the best examples of her great faith ingodand his unflailing continuous providence⁵.

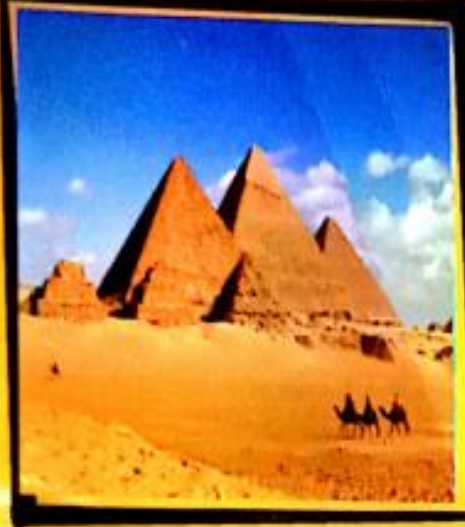
Azhagappapuram:

When Sister Scholastica established the Congregation of the Little Sisters of Jesus with the help of Fr.Navamoni of Azhagappapuram, she could not find a proper place to live. At that time, they lived in a small hut. Only one sister named Sister Agnes worked as a crafts teacher in the Azhagappapuram school. Other sisters were doing the ecclesiastical services by doing the house visit. Later when somebody who had gone to collect fire wood in the nearby hill found a female child in the forest and this was the one caused for the foundation of Azhagappapuram orphanage and its first ever inmate. Thus, the first orphanage and home for the poor was founded in 1964 at Azhagappapuram⁶.



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ROLE OF TAMIL WOMEN IN INDIAN FREEDOM MOVEMENT

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Abstract

Tamil Nadu has a great tradition of heritage and culture that has developed over 2000 years still continues to flourish. British men considered India as market to sell their business product. So from the beginning itself their aim was exploiting the Indian economy whenever economy dullness happened they dumped their good in India and sold it in later days they introduced many changes. More than the Indian kings to eradicate misbelief and women freedom. In the British period the education of women was encouraged and this resulted change in the position of women the educated women rise the voice against British domination and entered into the freedom struggle. This paper women participation in the freedom movement in Tamil Nadu deal about the women freedom fighters of Tamil Nadu and the various contribution for freedom struggle.

Keywords: British period, Women Freedom Fighters, Freedom Struggle, National Freedom Movement.

Introduction

The women participation in the freedom movement in Tamil Nadu. The sacrifice made by the women of India will occupy the foremost place. They fought with true spirit and undaunted courage and hardships to earn Indian freedom. When most of the women freedom fighters were in jail the women came forward and took charge of the struggle. The list of great women whose names have gone down in history for their dedication and undying devotion to the service of Indian may be a long one. The entire history of the freedom movement is replete with the sag of bravery, sacrifice and political sagacity of great men and women of the country.

In keeping with this tradition, burden of tears and toils of the long years of struggle for Indian freedom was borne by the waive mothers and daughters, silently and cheerful. The programmed of self-imposed poverty and periodical jail going was possible only because of the willing co-operation of the family. In the various resistance movements in the villages, the illiterate women plead this passive but contributory part as comrades of their

men folk. Tamil Nadu played a vital role in the Indian freedom movement many leaders have shed their life for the cause of freedom in the country. Because of their sacrifice Indian got liberation and freedom from the British rule. Besides the hundreds and thousands of Indian women who dedicated their lives for the cause of their motherland, there were a number of the noble and courageous women in Tamil Nadu who made significant contribution in the national freedom movement. Hence the women participation in freedom movement in the Tamil Nadu has been meant to explain the leading role played by some of the prominent women in Rani Veelu Nachiyar, kuyili Ammaiyar, Udaiyal Ammaiyar, Vadivu sundaralingam, Vaithamanithi Mudumbai Kothainayaki Ammal, Thillaiyadi Valliammai, Dr. Muthukshmi Reddy, Krishnammal Jeganathan for the freedom movement.

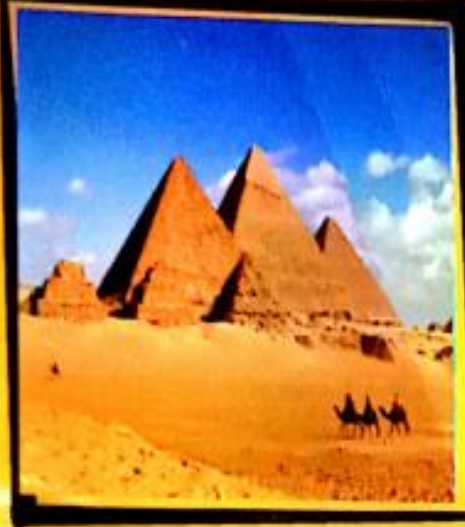
Rani Velu Nachiyar

Rani Velu Nachiyar was the first queen to fight against the British colonial power in India. She is known by Tamils as Veeramangai. She was the princess of Ramanathapuram and the only child of



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ADVANCING WOMEN'S EMPOWERMENT THROUGH THE ENHANCEMENT OF SKILLS

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Abstract

Women's Economic participation and Empowerment are fundamental to strengthening women's rights and enabling them to have control over their lives and exert influence in society. The economic empowerment of women is a prerequisite for sustainable development. Gender equality and empowered women are catalysts for multiplying development efforts. Government of India has enacted various rules and regulations within the constitutional framework to improve female representation in different professions. Currently, a majority of female workforce in India is unskilled. Skill is the bridge between job and workforce. Skill development is a key to improve employability and income earning opportunities for women and for enhancing sustainable rural development and livelihoods. Social outcomes are reflected in indicators of income inequality and poverty. Employment outcomes are reflected by indicators of employment rates. Unemployment, youth not in school and earnings. It promotes women's ability to achieve their rights and well-being while also reducing household poverty, increasing economic growth and productivity and increasing efficiency. Economic empowerment is one of the most powerful routes for women to achieve their potential and advance their rights. Women contribute more to their families, societies, and national economies. It has been in their children, providing a route to sustainable development.

Keywords: Empowerment-Economic-Political- framework-Skill Development-Government -Youth

Introduction:

There is increasing recognition that economically empowering women is essential both to realize women's rights and to achieve broader development goals such as Economic growth, poverty reduction, health, Education and welfare. In the last five years, a broad range of organizations have committed themselves to the goal of women's economic empowerment. These organizations realize that economically empowering women is a win-win that can benefit not only women, but society more broadly. It promotes women's ability to achieve their rights and

well-being while also reducing household poverty, increasing economic growth and productivity and increasing efficiency. Economic empowerment is one of the most powerful routes for women to achieve their potential and advance their rights. Women contribute more to their families, societies, and national economies. It has been in their children, providing a route to sustainable development.

Women Empowerment:

Women empowerment is empowering the women to take their own

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An Economic Study on Brick Industry Workers in Ramanathichan Puthur of Kanyakumari District**Dr. S.Vimal Dolli**

Department of Economics, Holy Cross College (Autonomous), Nagercoil.

Corresponding author- Dr. S.Vimal Dolli**DOI- 10.5281/zenodo.7952680****Abstract**

Brick - Kiln Industry is a demand-based industry, which fulfils the growing demands for expansion and economic development. Such industries are categorized as small-scale industries and traditional situated in rural and peri-urban areas to fulfil local requirements of building construction. Brick kiln industry is an important part of the rural and urban economy as it is based on local resources of the area. Like other rural based small industries, the Brick kiln Industry also provides income and employment opportunities by employing many people, both men and women during agricultural off season.

Introduction

Brick industry is basically a demand based industry. The growth of brick industries are the result of growing demands for bricks. Due to the emergence of various developmental factors, mainly housing, urbanization and infrastructure lead a high demand for bricks. The rate of urbanization, growth of per capita income are some of the important indicator of growing demand for bricks. The rising demand for bricks can also be perceived with continuous rising trends of state per capita income. From the changing scenario of housing pattern in India, it can be easily perceived that the demands for bricks are continuously rising in the state along with the other parts of India because there is a close relation between per capita income and brick demands. Other traditional building materials are become scarce and costly and they are temporary in nature. As a result, the time and money spent on such non-permanent housing gradually replaced by permanent dwellings. These houses might even eventually become valuable assets for the owner. Besides it, the use of concrete structures increases the status of the owner, which considered a sign of being modern and wealthy. Thus, the per capita income gives an idea of standard of living of the people. The rising demand of bricks also a sign of higher living of standard. The growing change in the pattern of household from temporary structure to semi-permanent one are also some other indicator of rising demand for bricks.

Issues of the Indian Brick Industry

The Indian brick industry is currently based on decentralized production activity using energy intensive, resource depleting and highly polluting technologies and production methods. Due to regulatory pressure they are confronted with environmental regulation and face numerous challenges for its survival; especially small scale brick entrepreneurs.

High Air Pollution from the Brick Sector: The environmental problems in the brick industry have been exacerbated by cheap access to resources such as soil, coal, biomass materials and labour. This

results in irreversible environmental damage in terms of loss of top soil, continued wastage of energy which is a valuable national resource and damage to property and crops from high air pollution.

Environmental Degradation and the Problem of Compliance:

Massive scale environmental degradation is caused through unorganized and wide scale brick production activities. The indiscriminate usage of top soil in brick making remains a serious issue. Approximately 2.2 billion cubic metre of clay/silt is utilized every year for brick making i.e. top soil of 2200 sq. km of surface land is scooped out up to a depth of 1 metre every year, leaving it infertile for future use.

Risky Nature of Brick Business for Small Scale Entrepreneurs:

The present nature of brick business experiences very high vulnerability from uncertainties in weather conditions, frequent changes in soil quality, poor control over the Quality of fuel and technology. A significant uncertainty in production costs in the brick industry is on account of fuel usage which accounts for 30% of the production cost. With unabated increase in the price of coal and higher costs of transportation, this cost factor is beyond the control of the brick entrepreneurs.

Alternative Technology Solutions are not

Demonstrated Commercially: The brick kiln owners, threatened with closure, are reluctant to change over to alternative technology solutions. This is largely due to the fact that new technology solutions have been demonstrated only on a limited scale; with claims of the new kilns being largely unproven. The problem is the absence of critical presence of commercially proven alternatives.

Deteriorating Socio-Economic / Working Conditions of Brick Workers:

The workers in the brick industry are subject to extreme working conditions and poor remuneration. The brick moulder families are contracted through middlemen and usually belong to poor districts of Uttar Pradesh, Bihar, Chhattisgarh and Orissa. Their employment

மனிதமும் மதிப்பீடுகளும்



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ஹோலிகிறாஸ் கல்லூரி (தன்னாட்சி)
நாகர்கோவில்

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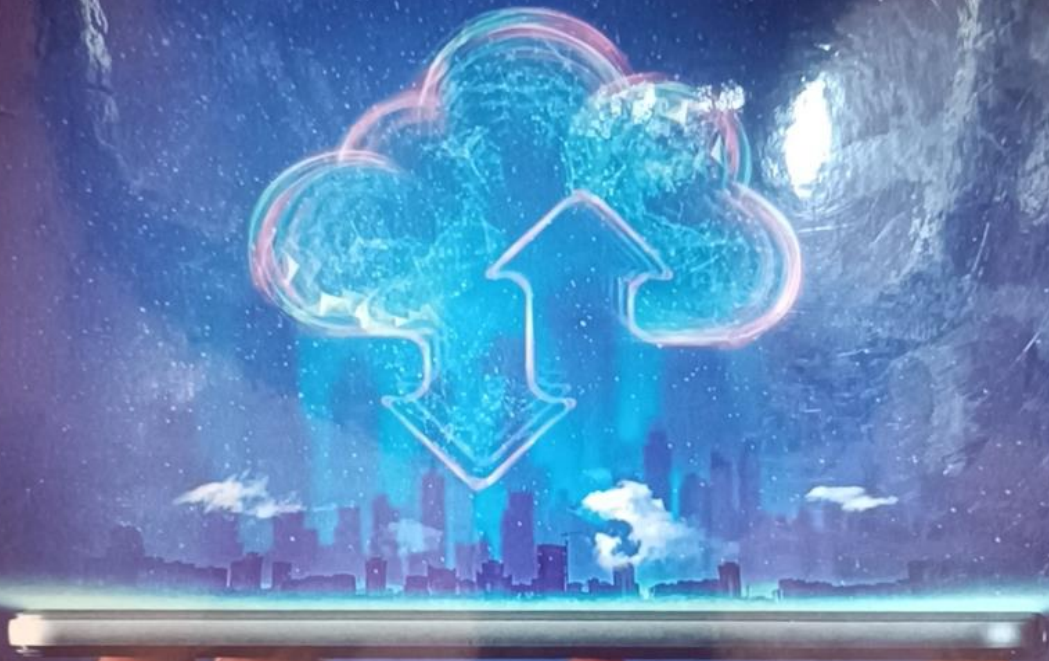


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மனதில் உனக்கு எதற்கு பாரம்?
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சுயத்தை இழந்து பறக்கும் மனிதா!
மனதை சற்றுத் திருப்பிப் பார்
மறந்துபோன மதிப்பீடுகளை திரும்பிப் பார்
மண்ணில் இன்றே மகத்துவம் காண்பாய்!
உடலின் வளர்ச்சிக்கு உணவிடும் மனிதா!
உயர்ந்த விழுமியங்களால்
உணர்வுக்கும் உணவிடு!
உயர்ந்த உனக்குள் இருக்கு!
உலகை இன்றே வெற்றியால் நிரப்பு.

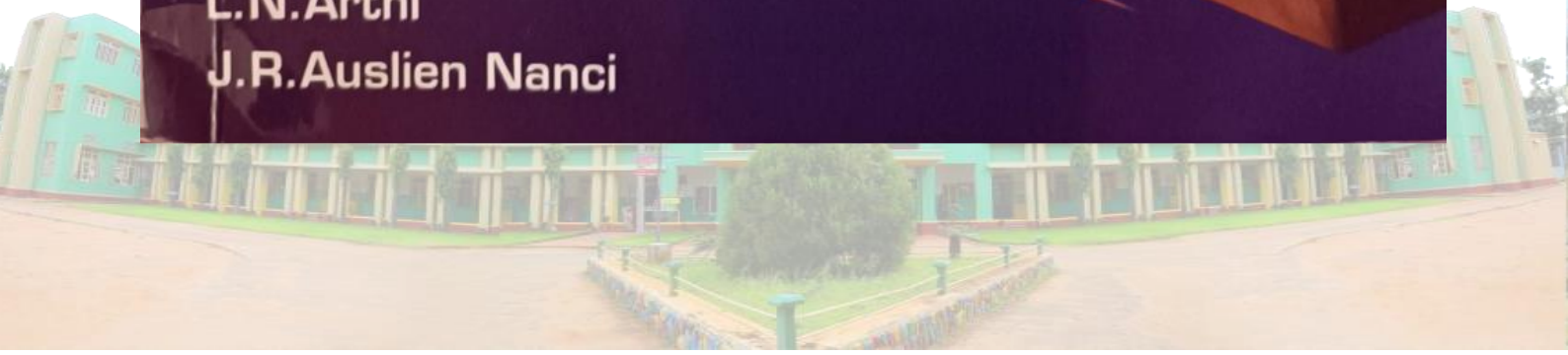
- Dr. J.M. Vinitha Charles



**SHODHCAVERY: REVISITING MULTIDISCIPLINARY
ACADEMIC RESEARCH AND GLOBAL PERSPECTIVES
IN THE NEW ERA**



**Dr.E.Joseph Rubert
L.N.Arthi
J.R.Auslien Nanci**



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**SHODHCAVERY: REVISITING MULTIDISCIPLINARY
ACADEMIC RESEARCH AND GLOBAL PERSPECTIVES
IN THE NEW ERA**

A Study on Online Shopping in India – An Overview

Dr A. Sameema

Assistant Professor in Economics
Holy Cross College (Autonomous), Nagercoil.

Abstract

The practice or action of purchasing goods or services through the Internet is known as online shopping. It involves going online, finding a seller's website, making a purchase, and setting up delivery. The buyer either pays for the item or service online with a credit or debit card or upon delivery. The process of online purchasing may be characterized as when customers opt to shop on the internet. According to Alexa, the top five most visited shopping websites in 2019 are as follows: Amazon.com, Netflix.com, Ebay.com, Amazon.co.uk, and Etsy.com are the top five online retailers. Amazon is the largest online retailer, with a net sales of \$232.88 billion in 2018. In the first quarter of 2019, the company set a profit record, earning \$3.6 billion, or \$7.09 per share, above analyst expectations of \$4.72 per share. With the previous record of \$3 billion set last quarter, Amazon continues to lift the bar for earnings every quarter. Nonetheless, the rise of online shopping has led to a better-informed consumer who can shop around quite easily and without spending much time. It was a win-win situation for both the buyer and the seller in the end.

INTRODUCTION

The Origins of Online Shopping It all started in 1979 when Michael Aldrich 'created' internet purchasing. Businesses were transformed by the use of videotext, a two-way communication service. With the emergence of the internet in India in 1995, online shopping began. Online shopping gained popularity during



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**An Economic analysis of Non- Communicable Diseases and Health Care Expenditure of Old Age
People in Kanyakumari District**

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Abstract

Health Problem are supposed to be the major concern of the society as older people are more prone to suffer from ill health than younger age groups. It is often claimed that ageing is accompanied by multiple illnesses and physical ailments. Besides Physical Illnesses, the aged are more likely to be victims of poor mental health, which arises from senility, neurosis and extent of life satisfaction. Thus, the health status of the aged should occupy a central place in any study of elderly population. In most of the Indian elderly in general and the rural aged in particular are assumed to have some health problems. Old age will eventually reduce people's physical capabilities and make them more vulnerable to disease, but the link with medical expenditure is far from immediate.

Introduction

Elderly or old age consists of ages nearing or surpassing the average life span of human beings. The boundary of old age cannot be defined exactly because it does not have the same meaning in all societies. People can be considered old because of certain change in their activities or social roles. Also old people have limited regenerative abilities and are more prone to diseases, syndromes and sickness as compared to other adults. The expectation of life gives a good idea about the general health status of the people. At a particular age, the expectation of life is the number of years a person is expected to live, on an average, after attaining that particular age. It takes into consideration the morbidity experiences during the whole life cycle of an individual, which depends on the availability of health facilities, nutritional level of the people etc. with the rapid advancement in medical science and technology it has now become easier to control various dreaded diseases which were the cause of high mortality earlier.

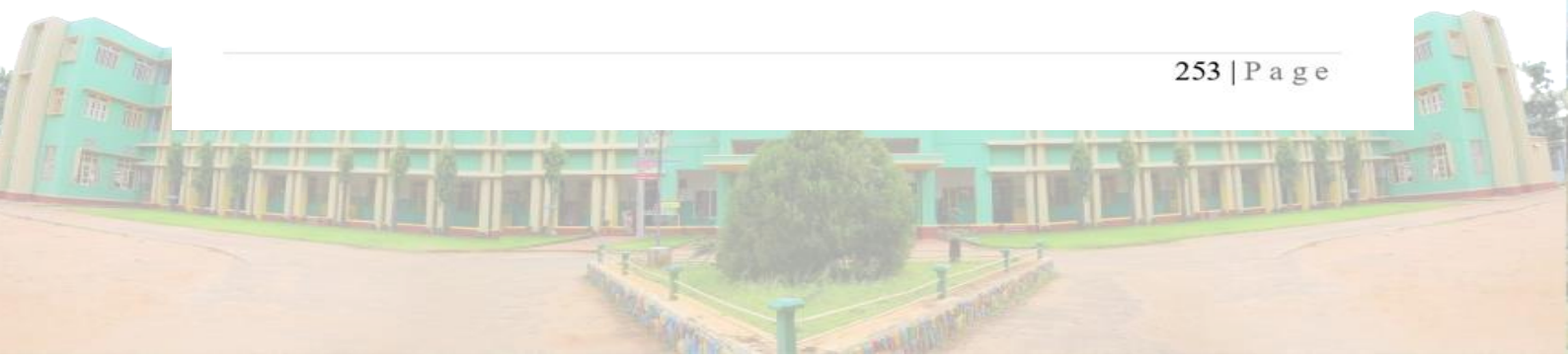
With the increase of elderly population, concern with their health is also increasing. Good health facility not only checks the pre-mature ageing but also keeps individual in fit and active position that provides them strength to face the vicissitudes of old age. When number of aged are in good health and also economically productive, the aged with problem will be narrowed down to a few.

Objectives

1. To Study the treatment cost incurred by the old age people affected by the non communicable diseases.
2. To know the reason for the cause of disease of the old age people affected by non-communicable diseases.

Methodology

The study made use of both primary data and secondary data. The primary data have been collected from 50 sample respondents. The researcher collects the information through interview schedule method.





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A Study on Consumer Behaviour towards Online Shopping

A. Sameema,

Department of Economics, Holy Cross College (Autonomous), Nagercoil.

Abstract

Since many individuals are busy and have a jumbled schedule, online purchasing has become quite important in the twenty-first century. In such a circumstance, internet shopping became the most convenient and appropriate way of purchasing for them. The Internet has transformed the shopper's retail system and has swiftly grown into a worldwide market. An online store evokes the actual act of purchasing goods. The assumption of classical model behavior was used in this work. The Internet has changed the way customers buy goods and services. At the same time, many businesses have begun to use the Internet with the goal of lowering marketing costs and, as a result, lowering the price of their products and services in order to remain competitive. Companies also utilize the Internet to link and broadcast data in order to sell products online, collect feedback from customers, and perform satisfaction surveys with customers. Customers utilize the Internet not just to buy products online, but also to compare prices, products, features, and after-sales and support assistance they will receive if they buy from a certain retailer.

Introduction

Internet is changing the way consumers shop and buy goods and services and has rapidly evolved into a global phenomenon. Many companies have started using the internet to cut marketing costs, thereby reducing the price of their products and services to communicate and disseminate information, to sell the products, to take feedback, and also to conduct satisfaction surveys with consumers. Consumers use the internet not only to buy the product online but also to compare prices, product features, and after-sales service facilities they will receive if they purchase the product from a particular store. Many experts are optimistic about the prospects of online business.

In addition to the tremendous potential of the E-commerce market, the internet provides a unique opportunity for companies to more efficiently reach existing and potential customers. Although most of the revenue of online transactions comes from business-to-business commerce, the practitioners of business-to-consumers commerce should not lose confidence. It has been more than a decade since business-to-consumer Ecommerce first evolved. Scholars and practitioners of electronic commerce constantly strive to gain and improve insight into consumer behavior from different perspectives. Many of the studies have cost new emergent factors or assumptions which are based on the traditional models of consumer behavior, and then examine their validity in the internet context.

Changing Attitude towards Online Shopping

“Awareness, Future Demand Focus for Emerging Markets & current issues” Malls springing up everywhere, and yet people are E-shopping! And not in small numbers either. Consumers are more rational nowadays and can get choices from the market. Awareness among consumers is spread through the internet. The number of internet users is increasing day by day which attracts people who have an option to buy online. It was never thought that Indians would go in for E-shopping in such a big way. Ticketing, travel bookings, and even books and movies seem fine to buy online. Knowing that in India sizes vary from brand to brand and quality is inconsistent, even of some electronic items, how is it that





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Biopesticides usage in India-An Overview

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Abstract

Biopesticides are certain types of pesticides derived from such natural materials as animals, plants, bacteria, and certain minerals. Biopesticides are formulations derived from naturally occurring compounds that manage pests through non-toxic and environmentally favorable means. Being living organisms (natural enemies) or products, biopesticides represent less of a risk to the environment and to human health. Biopesticides, classified into three broad classes, are increasingly used in pest control, and include semiochemicals, plant-incorporated protectants (PIPs), and compounds derived from plants and microorganisms. Because of their advantages for the environment, target-specificity, efficacy, biodegradability, and applicability in integrated pest management (IPM) programs, biopesticides are gaining interest. Although biopesticides have seen significant advances in market penetration, they still make up a relatively small fraction of pest management solutions. This paper makes an attempt to study about the biopesticides users in Kanya kumara District.

Introduction

The word “biopesticides” refers to compounds that, as opposed to general chemical pesticides, are used to control agricultural pests through specialised biological effects. Used to manage pests, biopesticides refer to products containing biocontrol agents, natural entities or chemicals produced from natural materials such as animals, plants, bacteria, or specific minerals. These agents may also include their genes or metabolites. The FAO defines biopesticides as passive biocontrol agents, compared to those that actively seek out the pest, such as parasitoids, predators, and numerous types of entomopathogenic nematodes. Large numbers of greenhouse farmers in Michigan are learning that biopesticides can be employed in their integrated pest management (IPM) programs in addition to naturally occurring enemies that can be bought commercially. Growers can benefit from several advantages provided by biopesticides such as lower employee risk, negligible re-entry and pre-harvest intervals, and compatibility with biocontrol programs. Biochemical pesticides are naturally occurring substances that control pests by non-toxic mechanisms. Conventional pesticides, by contrast, are generally synthetic materials that directly kill or inactivate the pest. canola oil and baking soda have pesticidal applications and are considered biopesticides. Biochemical pesticides include substances that interfere with mating, such as insect sex pheromones, as well as various scented plant extracts that attract insect pests to traps. Because it is sometimes difficult to determine whether a substance meets the criteria for classification as a biochemical pesticide. Pesticides are the natural or manmade substances that are primarily used to eliminate weeds, pests, insects, and disease-causing pathogens in plants in the agricultural fields. Some examples include insecticides, herbicides, fungicides, nematicides, and rodenticides. The rates of pest-caused loss of crops have been noticed to be quite high in both developing as well as developed countries. The key elements of biopesticide management are a reduced crop loss and strong management



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Opportunities and Challenges of Women Entrepreneurs

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Abstract

Women entrepreneurs are women who start and own their businesses, taking on the role of an entrepreneur. They are individuals who identify opportunities, take risks, and create innovative solutions to meet market needs. Women entrepreneurs play a crucial role in driving economic growth, job creation, and fostering societal development. They contribute to diverse industries, ranging from technology and finance to fashion and healthcare.

Key Words: Women, Entrepreneurs, Problems

Introduction

Women entrepreneurs are individuals who start, own, and operate their own businesses. They are driven by passion, innovation, and a desire to create a positive impact in their chosen industries. Women entrepreneurs play a vital role in the business world, contributing to economic growth, job creation, and societal development. Women entrepreneurs face unique challenges and opportunities, often navigating through gender biases, limited access to funding, and networking constraints. However, they overcome these obstacles with resilience, determination, and the ability to forge their own path. By embracing their entrepreneurial spirit, women are breaking barriers and making their mark across diverse sectors such as technology, finance, fashion, healthcare, and more. Women entrepreneurs bring diverse perspectives, creative problem-solving skills, and a fresh approach to business. Their unique experiences and insights foster innovation and drive competitiveness. By starting and growing their businesses, women entrepreneurs create employment opportunities, stimulate economic activity, and contribute to the overall development of their communities. Women's entrepreneurship also serves as a catalyst for gender equality and empowerment. By gaining financial independence, women entrepreneurs challenge traditional gender norms, inspire other women and girls, and pave the way for future generations. Their success is not only the benefits of themselves but also contributes to building more inclusive and equitable societies.

Objectives

1. To know the factors influencing women to become an entrepreneur.
2. To identify the problems faced by the women entrepreneurs.
3. To suggest measures to overcome the problems faced by women entrepreneurs.

Methodology

This study is based on secondary data. Secondary data were collected from books, journals, project reports and from internet sources.



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A Study of Noise Pollution:

Possible Effects on Public Health in Nadaikavu Village

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Abstract

Noise represents important public health problems that can lead to hearing loss, sleep disruption, cardiovascular disease, social handicaps, and reduced productivity. Noise pollution is a major problem in cities around the world. Noise is defined as unwanted sound. Environmental noise consists of all the unwanted sounds in our communities except that which originates in the work place. Environmental noise pollution is a threat to health and wellbeing. It is more serve and widespread than ever before and it will continue to increase in magnitude and severity because of population growth. Urbanization and the associated growth in the use of increasingly powerful, varied and highly mobile sources of noise. It will also continue to grow because of sustained growth in highway, rail and air traffic. In the factory workers are exposed to high noise due to machinery in routine. The potential health effects of noise pollution are numerous pervasive. Noise produces direct and cumulative adverse effects that impair health and that degrade residential. Social and working environment with corresponding real and intangible losses. Noise adversely affects future generations by degrading residential social and learning environments with corresponding economic losses. The aim of enlightened governmental controls should be to protect citizens from the adverse effects of airborne pollution, including these produced by noise. People have the right to choose the nature of their acoustical environment; it should not be imposed by others.

Key words: Noise pollution, Health problems, Urbanization, Airborne pollution.

Introduction

Noise pollution, or sound pollution, is the propagation of noise or sound with ranging impacts on the activity of human or animal life, most of which are harmful to a degree. The source of outdoor noise worldwide is mainly caused by machines, transport and propagation systems. Poor urban planning may give rise to noise disintegration or pollution, side-by-side industrial and residential buildings can result in noise pollution in the residential areas. Some of the main sources of noise in residential areas include loud music, transportation (traffic, rail, airplanes, etc.), lawn care maintenance, construction, electrical generators, wind turbines, explosions and people.

Documented problems associated with noise in urban environments go back as far as ancient Rome. Research suggests that noise pollution in the United States is the highest in low-income and racial minority neighbourhoods, and noise pollution associated with household electricity generators is an emerging environmental degradation in many developing nations.

High noise levels can contribute to cardiovascular effects in humans and an increased incidence of coronary artery disease. In animals, noise can increase the risk of death by altering predator or prey detection and avoidance, interfere with reproduction and navigation, and contribute to permanent hearing



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Problems and Prospects of Female Domestic Workers with Special

Reference to ~~Monday Market Terms~~

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Abstract

Female domestic workers are the part of unorganized workforce of India. This trend of keeping females as a domestic worker has increased day by day this could be because of lack of education, Unemployment and lack of other Vocational skills. This study highlights the “problems and prospects of female domestic workers” which basically focuses on the “problems of work” and problems related to health, wages, work security, family related problems because of work, mental, physical problems at workplace. The study also reveals the awareness of the respondents about the Governmental Organizations (GO’s) & Non-Governmental Organization (NGO’s) working for their welfare. The results and discussion part gives a clear picture of the “Problems and prospects of the female domestic workers of that area”. The suggestions given in the study can be cited to improve the conditions of Female domestic workers in India.

Key words: Education, Health, Wages, Work security, NGO’s

Introduction

Domestic workers are those workers who perform work in or for a private household. They provide direct and indirect care services, and as such are key members of the care economy. Their work may include tasks such as cleaning the house, cooking, washing and ironing clothes, taking care of children, or elderly or sick members of a family, gardening, guarding the house, driving for the family, and even taking care of household pets. Domestic workers are addressed by different names-maid, ayah, and jhee”. Generally, the domestic worker’s work includes sweeping, mopping, dusting, cleaning dishes, washing clothes, cooking, clearing the table after meals, hanging up the washing, picking, and dropping children to bus stops, and often more. The term “domestic” also denotes a class of “menials” which includes many types of workers, like ayah, kitchen helper, cook and sweeper. Therefore the term is restricted to domestic servants as “those servants who do cooking, care the children, cleaning utensils, washing clothes, cleaning and sweeper the payment of wages”. Domestic worker is one who works within the employer’s household. The International Labour Organization (ILO) has a clear definition of a domestic worker: “someone who carries out household work in private households in return for wages”. The ILO also estimates that worldwide, domestic work is the largest employment category for girls under the age of 16. Yet despite the extent of this form of labour, there are no international standards to regulate the conditions of work or the wages of domestic workers. The amount of skill, technical know-how, and training required to do all these domestic chores may vary from little to vast. The work expected from these workers may be either, “part-time or full-time”. The working hours of women domestic workers are not fixed. It varies between three to fifteen hours. The work may be continuous or instalments spread over time. The working hours depend on the demands and requirements of the





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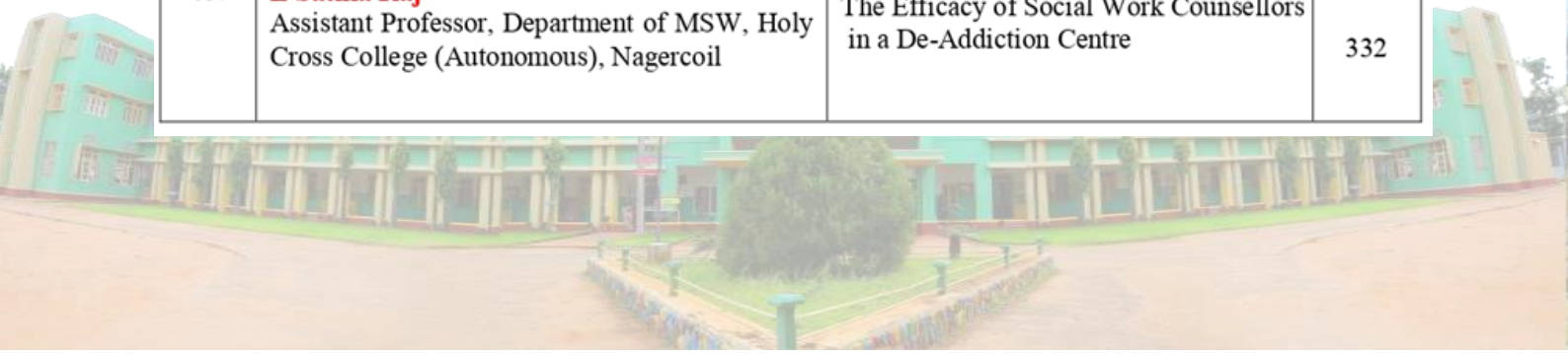
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Role of Education in Rural Development

S. Vimal Dolli

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Abstract

Education plays a crucial role in rural development by providing individuals with knowledge, skills, and opportunities that can contribute to economic, social, and cultural progress. Rural areas face unique challenges such as lack of infrastructure, low income, lack of transportation facilities, lack of basic amenities, inadequate fund and the migration of educated individuals to urban areas. Addressing these challenges and promoting education in rural areas is essential for fostering sustainable development and reducing disparities between rural and urban areas.

Key Words: Education, quality education, and poverty

Introduction

Education is important for everybody, whether they are learning new facts, skills, or trades. Having the opportunity to learn always benefits the individual. An education system in rural communities has the opportunity to build capacity and knowledge in the rural populace, helping them to make informed decisions about their farms and to innovate in agricultural affairs. Education also exposes the masses to information and helps prevent the misinterpretation of information. Education can lead to many positive outcomes, such as an improved ability to understand policies, procedures, rights, duties, government schemes, legislation, available benefits, and protection laws. Quality education is a pertinent tool for enhancing quality of life, creating awareness and capability, increasing freedom, and improving overall holistic human development for the people and the nation.

Education is considered a vital element in the development of a society. Rural development implies both the economic betterment of people as well as greater social transformation. The continuous growth of the Indian economy forces the Indian government to accelerate the process of developing all the branches of the Indian education system. As more than half of the population in India lives in villages, therefore the education system in rural area also plays a significant contribution in the growth of the economy.

Objectives

- To analyze the role of education in rural development
- To know the problems in rural education
- To suggest some remedial measures to improving rural education

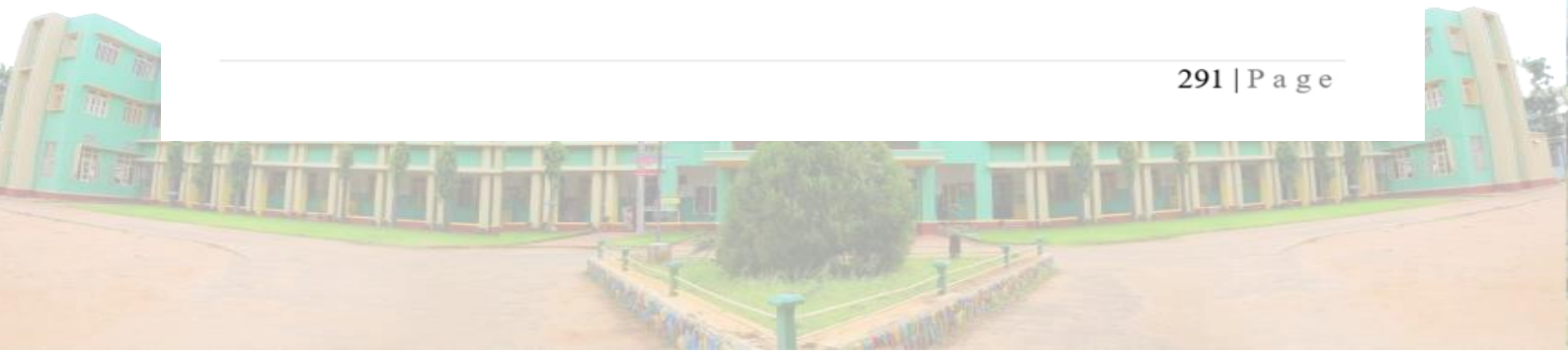
Methodology

This study is based on secondary data. Secondary data were collected from books, journals, project reports and from internet sources.

Role of Education

Education as a principal development strategy: Many development economists apparently believe that education is a primary means of promoting economic development in rural areas.

Education provides employment and income opportunities: Increasing the quality of education in rural areas can significantly impact the development of employment opportunities. It leads to improve the well being or standard of living of rural people by increasing income earning opportunities in rural areas.





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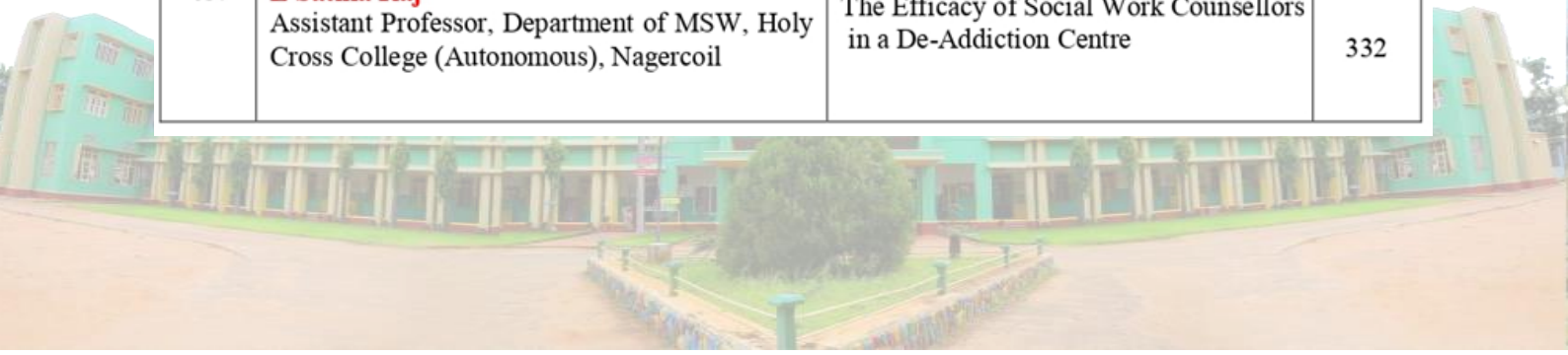
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The Impact of Stress and Effective Stress Management

J.M. Vinitha Charles

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Abstract

Every human being in the world is facing a big problem known as stress. Nobody is exempted from stress including children not even know the meaning of stress. Stress is considered to be an integral part of one's life. It can be any kind of worry, anxiety, hassle, trauma, tension, pain or pressure. Stress is sometimes avoidable but many times it is unavoidable. Everyone should aware of certain measures and ways about how to manage it in an appropriate manner. This paper highlights the meaning of stress, types, reasons and the ways to overcome it. It is a problem which is related with mind and it should be taken care of in its initial stage. So for the wellbeing of the society this topic is taken for the study.

Key words: Stress, Symptoms, Positive Stress, Negative Stress, Tension, Eustress

Introduction

Every human being in the world is facing a big problem known as stress. Nobody is exempted from stress including children not even know the meaning of stress. Stress is a fact of life, unexpected and sudden changes take place within one's life and lead to stress. For example, going to school or a college, getting married, changing jobs or health issues are kinds of situations that involve stress. Sometimes situations that cause stress also prove to be beneficial, for example, when a person get an employment in a reputed institution, that contributes towards his personality development, enhancement of knowledge, life and career prospects and well being; on the other hand, pressure of work, travelling to the office, if its located at a distance, living in a hostel also cause stress within an individual. Stress is unavoidable, situations and circumstances take place within the life of an individual that he cannot avoid stress, but he can cope up with a stressful situation if he learns effectively how to manage stress; he can control the detrimental effects of stress such as trauma and hypertension. In all kinds of professions such as medical, army, education, financial institutions, IT sectors etc. If anyone faces stress, they should possess the knowledge within them about how to interpret and react to the circumstances and overcome it.

Objective

- To find out the reasons behind stress
- To identify the procedures to overcome stress

Statement of the problem

Stress is considered to be an integral part of one's life. It can be any kind of worry, anxiety, hassle, trauma, tension, pain or pressure. Stress is sometimes avoidable but many times it is unavoidable. Everyone should aware of certain measures and ways about how to manage it in an appropriate manner. This paper highlights the meaning of stress, types, reasons and the ways to overcome it. It is a problem which is related with mind and it should be taken care of in its initial stage. So for the wellbeing of the society this topic is taken for the study.

Meaning and Definition

Stress is the way human beings react physically and mentally to the changes that occur in their lives in the form of certain events, situations, incidents or experiences. People experience stress in



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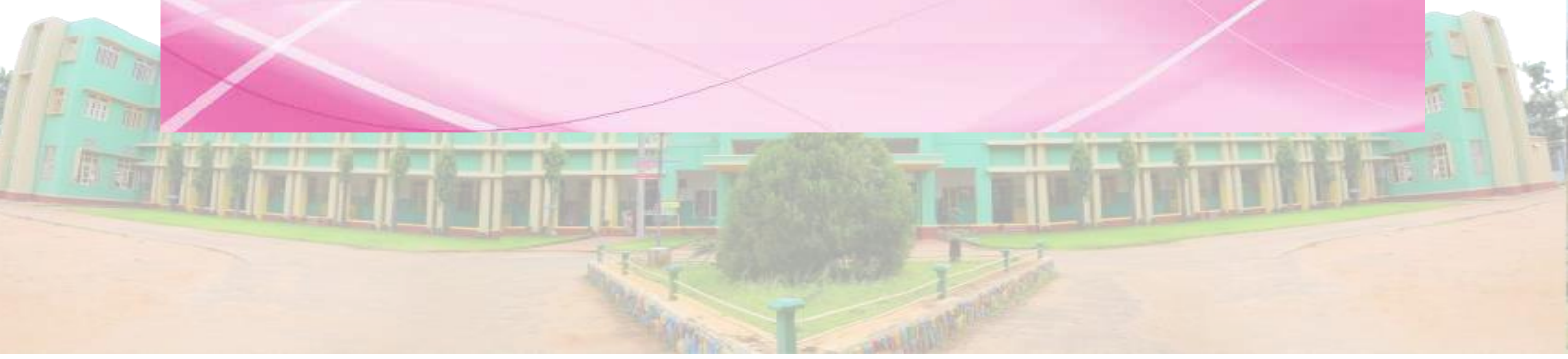
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**INTERNATIONAL CONFERENCE PROCEEDINGS ON TRAVERSING
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**A SOCIAL TRANSFORMATION ON WOMEN EMPOWERMENT:
CHALLENGES AND REMEDIES**

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ABSTRACT

The quest for women's empowerment is a pivotal facet of contemporary social transformation, exerting profound impacts on the socio-economic landscape of nations globally. Despite notable strides, enduring challenges impede the full realization of women's potential. This article delineates these obstacles while proposing a comprehensive array of remedies for achieving a societal metamorphosis rooted in women's empowerment. These challenges encompass deeply ingrained gender biases and discriminatory practices, which obstruct access to education, employment, and leadership roles for women. Moreover, economic disparities persist, driven by gender pay gaps and limited financial access. Gender-based violence continues to afflict communities, amplifying socio-economic inequities. Political and corporate decision-making often excludes women, constraining their influence over policies and economic prospects. The prescribed remedies entail legal reforms, gender-sensitive education, economic empowerment, anti-violence measures, enhanced political participation, reproductive rights, cultural transformation, support systems, financial inclusion, capacity building, data-driven interventions, media reform, and international cooperation. A holistic approach to these challenges and remedies is imperative for advancing gender equality, fostering inclusivity, and propelling societies towards transformative social change, anchored in the empowerment of women.

Keywords: Women, Empowerment, Issues, Challenges, Problems.

INTRODUCTION

Women empowerment is a fundamental concept that underscores the importance of granting women the necessary tools, resources, and opportunities to enhance their abilities and make informed choices in various aspects of life. It involves fostering a supportive environment where women can exercise their rights, participate actively in decision-making processes, and achieve their full potential without any form of discrimination or prejudice. Historically, women have faced numerous challenges in societies across the globe, ranging from limited access to education and healthcare to unequal opportunities in the workforce and decision-making spheres. Empowerment seeks to dismantle these barriers and create a level playing field, ensuring that women can lead dignified lives, contribute to their communities, and play a significant role in shaping the world around them.

In this modern era, the movement for women's empowerment has gained considerable momentum, driven by the belief that a society's progress and sustainability are directly tied to the empowerment of its women. Empowered women not only uplift themselves but also positively impact their families, communities, and ultimately, the entire society.

This paradigm shift has led to policies, initiatives, and campaigns that aim to bridge the gender gap, promote gender equality, and celebrate the achievements of women in diverse fields. This journey towards women empowerment is ongoing and requires continuous efforts



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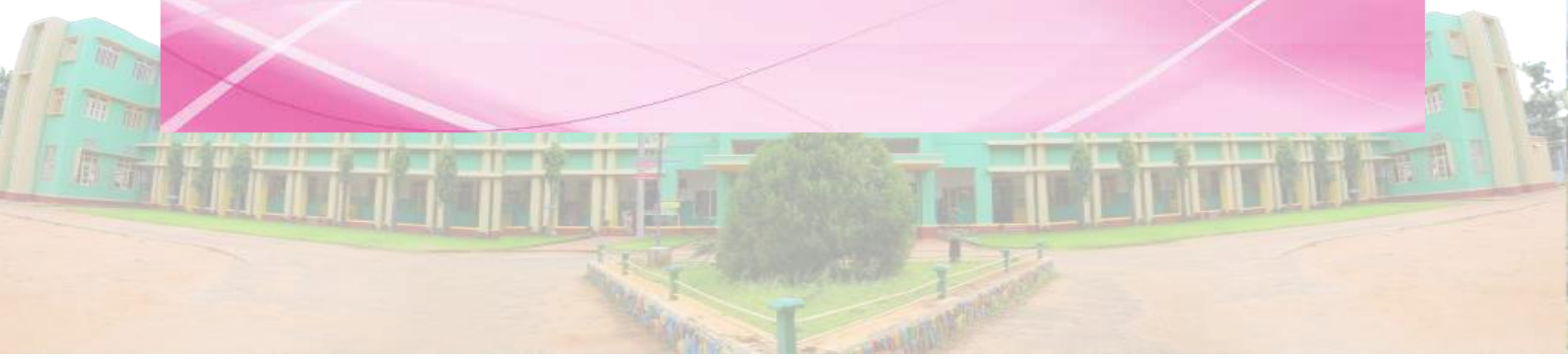
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Breaking Barriers: Advancing Women's Entrepreneurship in India

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Holy Cross College (Autonomous), Nagercoil.

ABSTRACT

This paper examines the challenges and opportunities faced by home-based women entrepreneurs, focusing on the challenges they face and the opportunities available in the ever-evolving world of entrepreneurship. Entrepreneurs play a significant role in economic growth and improve living standards. They build a strong economy, generate employment, and become independent through various forms and levels of entrepreneurial work. The Indian government has taken initiatives like Make in India and Start-up India to promote entrepreneurs, including home-based entrepreneurs. Entrepreneurial activities can be business-related, trade-related, agricultural, corporate, technical, and more. Home-based entrepreneurs, also known as homepreneurs, carry out various business activities, such as baking, fashion designing, and catering. They stay at home and become self-dependent entrepreneurs, generating employment opportunities for others. The paper emphasizes the need for empowering women in this field and offers recommendations for policy improvements. The paper also offers recommendations for policy improvements to support home-based entrepreneurs in their pursuit of success.

Introduction

In recent years, there has been a significant rise in home-based businesses, with women entrepreneurs playing a crucial role in this growth. This paper explores the challenges and opportunities faced by home-based women entrepreneurs, highlighting the challenges they face and the potential opportunities that await them. Women entrepreneurs empower and become independent by starting a business, generating funds, and managing resources, risk, and challenges. One-third of the global entrepreneurs are women, but India still has a long way to go. Tamil Nadu has the highest number of women entrepreneurs in India, followed by Kerala and West Bengal. Home-based entrepreneurs have been present in the country for centuries but are not following a strategic approach to marketing, generating funds, and investments. The present generation of entrepreneurs is now aware of the importance of a strategic approach to conduct business in a more formal way. Home-based entrepreneurs engage in various business activities such as stitching, embroidery, handicrafts, wet grinding,



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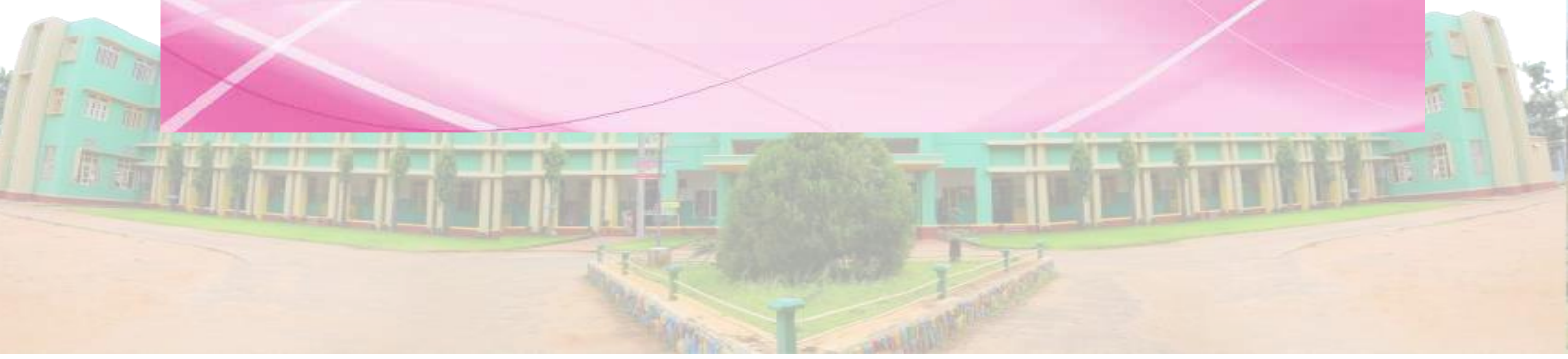
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Causes and Consequences of Income Inequality in India

Dr. S. Vimal Dolli

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Abstract

Income inequality in India is a multifaceted issue deeply rooted in its historical, social, and economic fabric. This abstract provides a concise overview of the causes and consequences of income inequality in India. The causes encompass historical legacies, disparities in education, the rural-urban divide, gender inequalities, and the enduring impact of the caste system. These factors result in significant income and wealth disparities, with a few enjoying a disproportionate share of economic resources. Consequently, India faces a range of consequences, including unequal access to education and healthcare, social tensions, political polarization, and economic implications. Reducing income inequality in India is not only a moral imperative but also essential for sustainable economic growth and social cohesion. This complex challenge demands a multifaceted approach, involving educational reforms, job creation, healthcare access, social safety nets, and progressive taxation. As India continues its pursuit of development and prosperity, addressing income inequality stands as a pivotal goal, essential for creating a more equitable and inclusive society.

Keywords – Causes, Consequences, Income, Inequality

Introduction

Income inequality is a pervasive and pressing socioeconomic issue that has garnered significant attention in recent years. It refers to the unequal distribution of income among individuals or households within a society. This disparity can manifest in various forms, from differences in wages and salaries to variations in wealth accumulation. Understanding the causes and consequences of income inequality is crucial for policymakers, economists, and society at large, as it has far-reaching implications for economic stability, social cohesion, and individual well-being. In a country where progress and poverty coexist, income inequality represents a critical socioeconomic challenge. Understanding its causes and consequences is essential for policymakers, scholars, and the broader society. The causes include historical factors, educational disparities, rural-urban divides, gender inequalities, and the persistence of the caste system. These factors contribute to variations in income and wealth distribution, with a disproportionate share of economic resources concentrated in the hands of a few. This concentration, in turn, leads to a myriad of consequences, including



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**AN ANALYSIS OF FOREIGN DIRECT INVESTMENT IN
RURAL ECONOMY OF INDIA**

S.Panimaya Mercy

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Nagercoil.

Abstract

Most of the rural people in India depend on agriculture for their livelihood. Therefore, rural economy in India is an agrarian economy, which forms the backbone of the country's economy. One of the recent reforms in Indian agriculture is inflow of FDI. The study aims to understand the FDI inflow in agriculture and related industries. It also aims to understand the problems faced by the farmers due to FDI in agriculture sector. Data for the present study is collected from the Department of Industrial Policy and Promotion, Ministry of Commerce and Industry, Government of India. The data were analysed by using percentages and averages. It is found that the food processing industries attract more amount of FDI than other agriculture related industries. Therefore the present study suggests that the government should take necessary steps to attract more amount of FDI in food processing industry and to form R & D department to have more number of value added products in agriculture sector.

Introduction

Most of the rural people in India depend on agriculture for their livelihood. Therefore, rural economy in India is an agrarian economy, which forms the backbone of the country's economy. One of the recent reforms in Indian agriculture is inflow of FDI. 100 per cent FDI under automatic route is allowed in floriculture, apiculture, horticulture, aquaculture, cultivation of vegetables & mushrooms and services related to agro and allied sectors. Therefore cultivators are now using modern agricultural implements and high-yielding varieties of seeds and fertilizers.

Objectives

The study aims to understand the FDI inflow in agriculture and related industries. It also aims to understand the problems faced by the farmers due to FDI in agriculture sector.

Methodology

Data for the present study is collected from the Department of Industrial Policy and Promotion, Ministry of Commerce and Industry, Government of India. The data were analysed by using percentages and averages.

Analysis

The Table – 1 shows the FDI equity inflow in agriculture and related industries from April 2000 to September 2018.

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**A STUDY ON WORK FROM HOME PEOPLES IN NAGERCOIL TOWN OF
KANYAKUMARI DISTRICT**

Ms. Josephine Shiny,

Assistant Professor & Research Scholar,
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Nagercoil

Abstract

Digital India is a Programme to prepare India for a knowledge future. The focus is on being transformative – to realize IT + IT = IT. The focus is on making technology central to enabling change. It is an Umbrella Programme – covering many departments. The 2020 strategic sessions were widely inclusive in nature and opened a new business approach. One of the recommendations made was to explore new ways of employee productivity. This strategic approach is perceived to be a new way of employee work-life balance. Providing remote work or flexible work conditions can assist Parliament to improve efficiency in delivering strategic objectives and effective use of its inadequate office and parking space. To highlight the two-way benefit of inclusive people management, contingency theory, with particular reference to flexible working conditions.

Key words: Digital, Remote work, Transformative

Introduction

Remote work, also called work from home (WFH), work from anywhere, telework, remote job, mobile work, and distance work is an employment arrangement in which employees do not commute to a central place of work, such as an office building, warehouse, or retail store. Instead, work can be accomplished in the home, such as in a study, a small office/home office and/or a telecentre. A company in which all workers perform remote work is known as a distributed company. Home based business and remote work are a legitimate avenue for employment, but anyone seeking such an employment opportunity can be scammed by accepting home employment offers from individuals or unknown companies. A 2007 report in the United States suggested that about 97% of work-at-home offers were scams. Many legitimate jobs at home require some form of post-high-school education, such as a college degree or certificate, or trade school, and some experience in the field in an office or other supervised setting. Additionally, many legitimate at-home jobs are not like those in schemes are portrayed to be, as they are often performed at least some of the time in the company's office, require more self-discipline than a traditional job, and have a higher risk of firing.

Statement of the problem

Despite all the challenges to working from home, remote work is incredibly rewarding for both organizations and employees, as long as you know what you are getting yourself into and how to overcome the most common problems. Once you successfully get through the first few hiccups, you will be able to improve the efficiency, productivity, and work-life balance of your employees.



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A STUDY ON LITERACY LEVEL TOWARDS ORGANIC FOOD PRODUCTS AMONG COLLEGE STUDENTS

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ABSTRACT

The purpose of this study was to find out the knowledge of college students regarding organic food. Organic food has an extensive portrayal in the market. People are become more health conscious after COVID-19. They are likely to consume a safety and quality food products which are free from harmful chemicals and preservatives. They are not considering about the price. Young generation also more concern about the health and expecting a healthy lifestyle. This study focus on the literacy level of organic food among the college students and also pay attention that what kind of organic food they are consuming from the market. The study uses primary and secondary data. 60 respondents were selected as a sample using convenient sampling method. According to data obtained that the respondents are highly aware about organic food and its benefits. In kanniyakumari district agriculture is a major role like that the respondents consumption are more in rice varieties and health mix. This induced the researcher to know the literacy level towards organic foods.

Keywords: Organic food, literacy level, Awareness, Agriculture

INTRODUCTION

The term "Organic" refers to the way food is produced and grown based on criteria in agriculture. Organic food is the product of farming system which avoids the use of man-made fertilizers, pesticides, growth regulators and livestock feed additives. Irradiation and the use of genetically modified organisms (GMOs) or products produced from or by GMOs are generally prohibited by organic legislation. Organic production is an overall system of farm management and food production that aims at sustainable agriculture, high-quality products and the use of processes that do harm neither the environment nor human. Organic farming means all kind of agricultural products are produced organically. It is a holistic production management which maintains long term fertility of the soil in a safe and natural way. Organic food products are usually produced with high expenses due to higher labour cost and it usually leads to comparatively lower yields. Producing environmentally friendly products causes a high input cost and also very difficult to manage these expenditure. Now a day's young generations are more conscious about food and their lifestyles because they face higher risk over heart disease, birth disorder and arthritis. Currently the demand for organic products increasing rapidly due to awareness regarding own health. Fruits and vegetables labeled as organic are generally grown without chemical fertilizers and pesticides. A few studies have suggested organic foods might be higher in nutrients than their traditional counterparts.

BENEFITS OF ORGANIC FOOD

Health: Organic food is free from chemical fertilizers and does not affect the human body in negative ways. Organic food contains a lower concentration of pesticides as

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DIGITAL BANKING: THE PATH TO GROWTH AND CHALLENGES

Saromi, N.,

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ABSTRACT

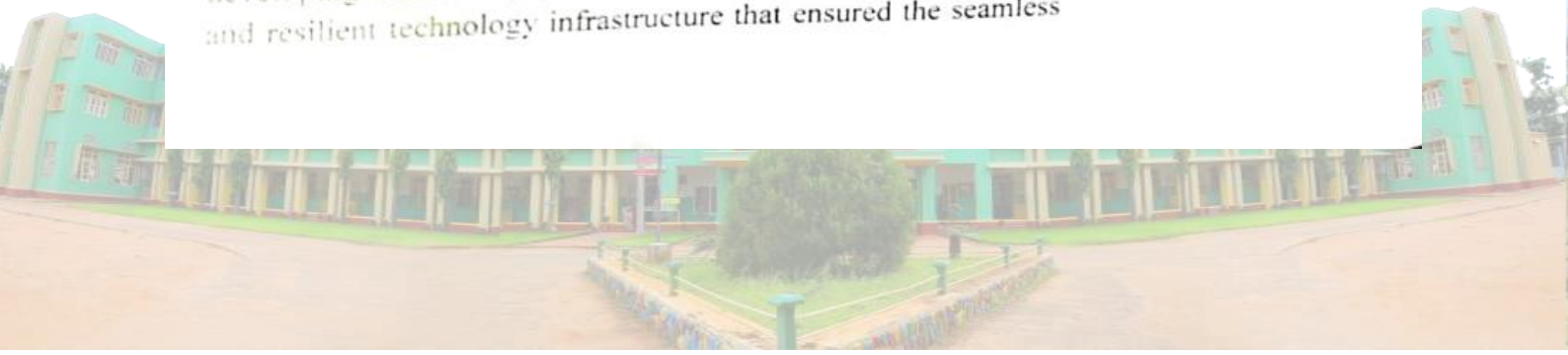
Digital banking is one of the most significant advancements in the history of banking business. However, despite the numerous benefits that online banking gives to users, there are a number of important problems and challenges for online banking marketers. Traditional banking habits, security, technical obstacles, transaction difficulties, and limited marketing budgets are all significant challenges that internet banking marketers must overcome if they are to flourish in this industry. However, demand for this industry remains quite high. As a result, as they work to overcome their marketing issues, digital banks are expected to become more advanced and effective. However, despite the advantages of digital banking, there are a number of different challenges and concerns.

Keywords: Digital banking, traditional banking

Introduction

Every economy, mature or developing, has relied on the banking industry. It designs and implements economic reforms any changes in this industry? The use of technology will have a significant impact on the growth of an economy. Nowadays, banks are looking for novel ways to supply and differentiate their various services. Customers, both corporate and retail, are no longer ready to queue in banks or wait on the phone for basic financial services. They require and expect the ability to make banking transactions at any time and in any location. Plastic money (Credit Cards, Debit Cards, and Smart Cards); internet banking, which includes electronic payment services, online investments, online trading accounts, electronic cash transfer and clearing services, branch networking, and telephone banking.

The Reserve Bank's efforts to create a less-cash society have continued with the widespread use of digital modes of payment in the country. In an era with increasing access to information, the Bank concentrated its attention on the safety and security of digital transactions when developing electronic payment systems. As a result, the Bank endeavored to establish a robust and resilient technology infrastructure that ensured the seamless





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**A Study on Tax Saving Schemes Adopted by Government Employees with Special Reference to
Nagercoil City Corporation**

S. Mary Pearly Sumathi

Assistant Professor, Department of Commerce, Holy Cross College (Autonomous), Nagercoil.

Abstract

Every person, whose taxable income for the previous financial year exceeds the minimum taxable limit, is liable to pay income tax during the current financial year on the income of the previous financial year, at the rates applicable during the previous financial year. Tax liability is reduced based on tax planning. The legislature has provided exemptions, deductions, rebates and reliefs on / from the taxable income, to achieve certain social and economic goals. To achieve these objectives people are encouraged to resort to tax planning by way of savings, investments postponement of expenditure, availed of loan etc. The sample size of this study was 50 Government Employees The primary data were analysed with percentage and ANOVA. This study analyses the tax saving schemes adoption behavior by the Government employees.

Key words: Tax planning, Taxable limit, Tax saving schemes.

Introduction

Income tax is an important direct tax. It is a prominent and most significant source of revenue for the Government. Income Tax, being a direct tax is an important tool to achieve balanced socio-economic growth by providing concessions and incentives in income tax for various developmental purposes. The exemptions, deductions, rebates and reliefs have been provided by the legislature to achieve certain social and economic goals. Section 80C provides a deduction from gross total income if an individual saves the amount and invests or deposits it in the specified schemes. The deductions have been provided to encourage savings and investments for economic development of the country. Thus, if a person takes advantages of the aforesaid deductions, he not only reduces his tax liability but also helps in achieving the objective of the legislature, which is lawful, social and ethical. Thus tax planning is an act within the four comers of the Act and it is not a colourful device to avoid the tax.

Statement of the Problem

The basic need of tax planning is to reduce the tax liability so that enough surplus out of profits remains with the earner of it for his personal and social needs and also for future investments. This is only possible by planning his tax affairs properly and availing the deductions, exemptions, rebates and reliefs etc. which are admissible under the Acts. He can succeed in doing so by updating his knowledge about the various concessions available in the taxation laws and the conditions to be fulfilled to avail them. The current study is an effort to evaluate the tax saving measures adopted behaviour by the Government Employees to reduce their tax liability.

Objectives of the Study

The following are the objectives of the study

1. To understand and evaluate tax planning methods / schemes being adopted by Government employees.
2. To ascertain the level of awareness of Government Employees on various tax planning methods / schemes available under the Income Tax Act.
3. To find out their preference of tax planning schemes.

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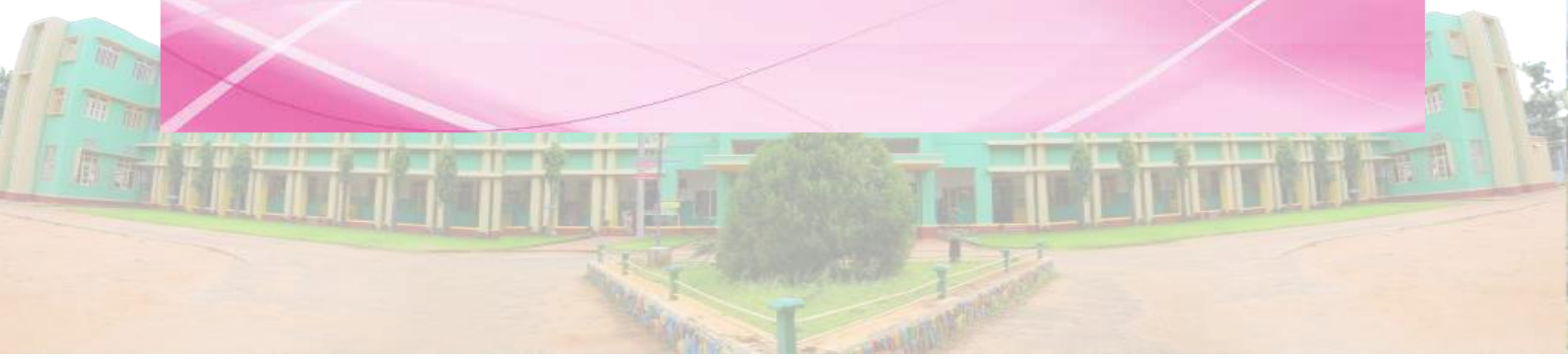
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Going Green: Benefits and Challenges

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ABSTRACT

Purchasing green products that are designed and manufactured with minimal environmental and health impact in mind, has become increasingly popular as society seeks more sustainable consumption choices. This paper provides an overview of the challenges and advantages associated with purchasing green products. Understanding the complexities and potential benefits of such purchases is crucial for consumers, businesses, and policymakers to make informed decisions that align with environmental and ethical values. The findings reveal that the decision to purchase green products presents consumers with both challenges and advantages. While higher costs, limited availability, performance concerns, misleading information, consumer knowledge and regulatory challenges can be barriers, the benefits including environmental benefits, economic benefits and health benefits underscore the importance of considering green products. The article concludes that a growing commitment to sustainability can drive market transformation, ensuring more accessible and reliable green choices for consumers. Policymakers and businesses are vital in addressing these challenges and promoting green product adoption to build a more sustainable future.

Keywords: Environment, Green products, Consumers, Sustainability

INTRODUCTION

The global movement to promote sustainable living and reduce environmental footprints emphasizes the importance of adopting green products. Green products, also known as eco-friendly or environmentally responsible products, are designed to minimize their impact on the environment throughout their lifecycle. However, embracing green products comes with benefits and challenges. By choosing green products, consumers can contribute to reducing greenhouse gas emissions, conserving natural resources, and protecting biodiversity. Additionally, these choices can lead to long-term cost savings and improved well-being.

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PERSPECTIVE AND TECHNOLOGICAL ADVANCEMENTS IN DIGITAL INDIA

FACTORS BEHIND CUSTOMERS' SUSTAINABLE CHOICES

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Tamil Nadu, India

ABSTRACT

The depletion of natural resources due to human activities has raised concerns about environmental protection and consumer behaviour. As a result, there is a growing demand for eco-friendly products that are recyclable and environmentally responsible. To understand what influences consumer purchasing decisions, numerous scholarly articles published between 2000 and 2020 have extensively researched and documented these factors. This study analyses 20 academic journals to gain insights into consumer behaviour, providing valuable information for marketers and businesses in the eco-friendly product market. The study provides an overview of the factors affecting customer behaviour towards environmentally friendly products. The study identifies key factors that have been extensively researched, such as high prices and limited availability as barriers to purchasing green products. Environmental concerns and subjective norms are identified as the main drivers. To effectively promote eco-friendly consumption, businesses should focus on developing affordable and environmentally safe products. Additionally, offering a wide range of products will provide customers with more choices and encourage them to adopt greener behaviours.

Keywords: Green Products, consumer, behaviour, environment.

INTRODUCTION

Green products are created and used in a way that preserves natural resources and the environment. Moreover, green inventions are inventions that are friendly to the environment and frequently address issues with energy efficiency, recycling, health and safety, renewable energy sources, and more. Natural resources are limited and some of them have already been used up or destroyed. Industries today use more energy than is necessary, which increases pollution. To reduce pollution, a management system built on eco-friendly practices and materials is therefore required. Governments, businesses, and industries from all over the world have been looking for ways to reduce waste because the earth's environment is currently not in a good condition due to pollution, such as water contamination, global warming, and the disappearance of forests, which are major environmental challenges. We can only get out of the difficult circumstance we are in now by going green. We should understand the importance of using green products to remedy this issue before things get

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**NATIONAL CONFERENCE PROCEEDINGS ON MULTIDISCIPLINARY RESEARCH
PERSPECTIVE AND TECHNOLOGICAL ADVANCEMENTS IN DIGITAL INDIA**

Enhancing Knowledge regarding Green Banking Practices and the Effectiveness.

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Abstract

Environmental protection has been acknowledged as one of the world's most pressing challenges of today, including India. It puts pressure on all sectors of the economy, together with financial services, to implement "green" projects that offer environmentally friendly services. Banking and financial institutions can take proactive measures, such as minimizing their extensive use of paper and establishing the notion of "green banking" at their multi-branch institutions.. The study conducted an analysis of 156 samples using the ANOVA method to explore the enhancement of knowledge concerning Green Banking Practices and their effectiveness. The research aimed to evaluate the impact of various knowledge-enhancing interventions on individuals' understanding of sustainable banking practices and their ability to discern their effectiveness. Findings from the study provide insights into the potential for educating consumers and stakeholders about the role of Green banking in fostering environmental sustainability and financial responsibility.

Key words: Green Banking, Customer awareness, Green Banking practices, Carbon Foot prints

Introduction

Many banks have started taking actions to protect the environment in recent years. They have implemented mass transit, used energy-efficient light bulbs, and taken several other measures to limit the pollution-causing agents in their internal operations. Environmentally friendly building materials, many green goods, paperless banking, green cards, and green loans, are currently in use. Many banks have begun focused on offering more and more green products¹. Banking sectors are the main source of money for different commercial projects and those are working in bringing the economic development of a country. Green banking is nothing but the operation of the banking activities giving especial attention upon the social, ecological and environmental factors aiming at the conservation of nature and natural resources. Green bank promotes environmental and social responsibility but operates as a traditional community bank providing excellent services to investors and clients. A bank can grow itself as Green Bank through the application of environment friendly policies in every sector of its activities and through the elimination of Carbon foot prints from its premise without changing main banking functions. Such bank acts as Ethical Bank, Moral Bank, Responsible Bank, and Sustainable bank in a society².

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EXAMINING THE ECOLOGICAL ADVANTAGES OF GREEN BANKING INITIATIVES: AN INVESTIGATION INTO ENVIRONMENTAL BENEFITS

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Abstract

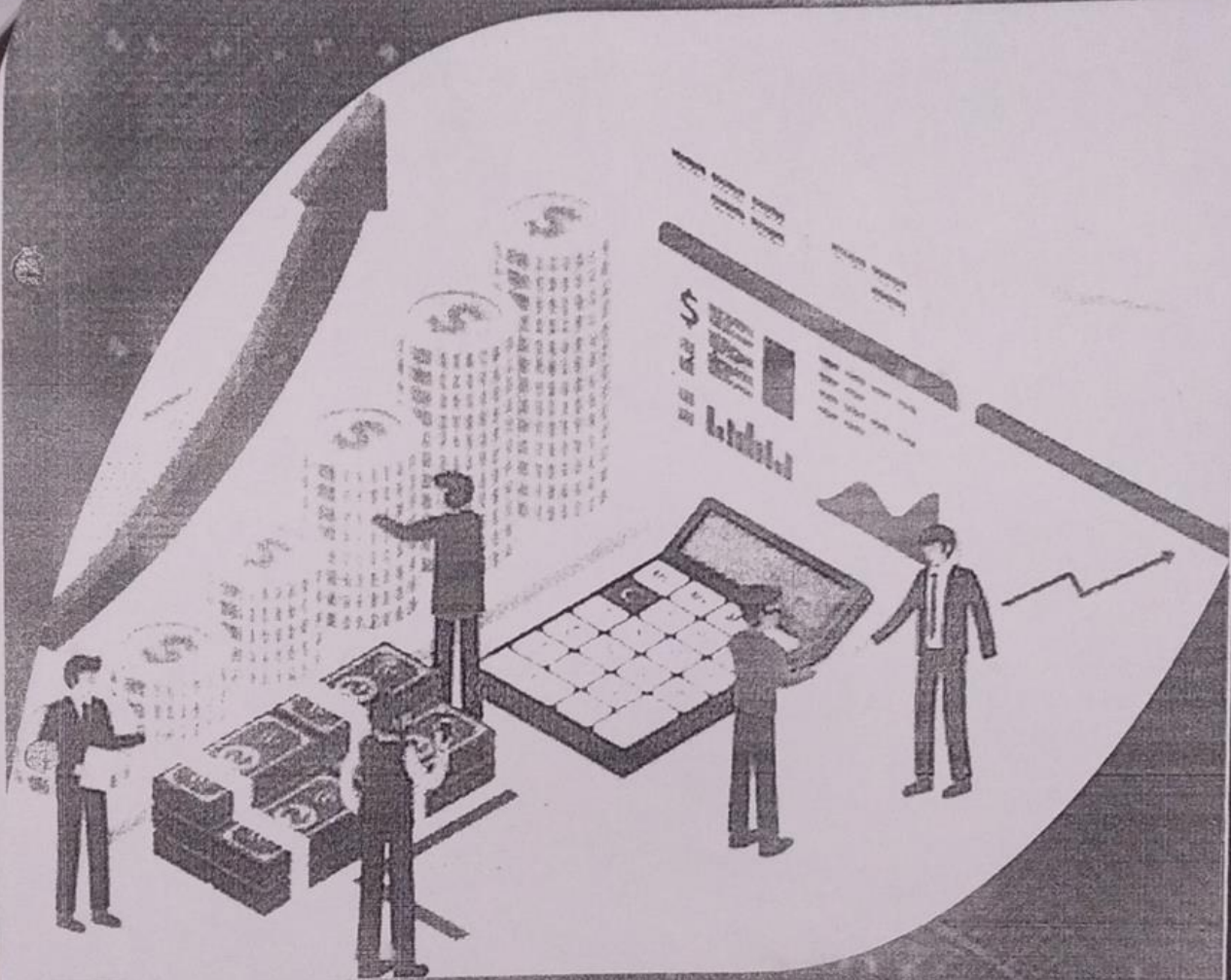
The world is facing a huge challenge of environmental degradation in the process of economic development. The banking industry, as a responsible actor in this regard, can better contribute to the environment by adopting different green banking practices. Green banking means promoting environmentally friendly practices and reducing carbon emissions in everyday banking operations. Green banks or eco-friendly banks not only raise their own standards but also influence the socially responsible behavior of other business. The study mainly focused on the environmental benefits of green banking products and services. For this purpose the study examined 156 sample respondents using multi random sampling method using Correlation Analysis methods. The findings of the paper elaborately explained about environmental benefits of products and services of green banking.

Introduction

In common the term "green" is used to describe a wide variety of social, ethical, and environmental behaviours. Although "green" in the discussion largely refers to banks' environmental consequences, environmental responsibilities, and environmental concerns for the study's purposes, which tend to examine environmental aspects they put on performances in their work. Green banking is encouraging eco-friendly behaviour and lowering the financial industry's carbon footprint. Though banking activities do not directly affect the environment, but their customers' actions have a significant external influence. Hence, banks must include green practices into their daily operations, physical structures, financial investments, and financing plans.

The external activity of banks has a significant environmental impact. Moreover, risk management and environment management are both used in the banking industry. As a result, one of the tasks of the banking industry should be environmentally benefiting practices. Furthermore, banks should prioritize lending to sectors of the economy that have already made significant strides towards being green and those that are doing so. This financial strategy is known as "Green Banking," and it represents an effort by the banks to encourage the development of environmentally friendly enterprises and, in turn, help the ecosystem recover. The idea of "Green Banking" will benefit all parties involved.

START-UPS AND MSMEs GROWTH ENGINES OF INDIAN ECONOMY



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STARTUP: AN INSIGHT INTO THE PHASES OF LIFECYCLE

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ABSTRACT

Startup is an early stage company (Five years old) which struggle for its existence. Innovation and creation are termed as the two sides of the startup coin. It is the budding stage of business, when it grows it will create its major impact on the country's economic and commercial activities. These newly born companies are formed by the entrepreneurs who conceived with an innovative idea to solve the problems of mass community at affordable prices. In India technology driven startups have great eminence. The main aim of start-up India action plan is to enhance startups in all fields. Every start-up has to pass several phases of their lifecycle to achieve the longevity of success. Each phase imposed lot of activities to be carried out by the entrepreneurs for the sustainability of their business. Many startups in India fail due to the unawareness about the start-up phases. To constantly go with each phase will help the entrepreneurs to validate their product and widen their network for the proper implementation of products in the market. For all these reasons, this study is taken to provide a clear vision on the paradigm of start-up lifecycle.

Key words: Startup, Entrepreneurs, start-up lifecycle

Introduction

Now a days developing country face a lot of struggles to cope up with economic crisis. Unemployment is the main issues faced by the developing countries. This will be the major hurdles of developing country like India to reach the status of developed country. Many developed countries like US and China find the best solution to deal with such problems; the solution is start-ups. Startup is nothing but an innovative organization created by an individual i.e. entrepreneurs to provide creative solution to the current problems faced by mass community. Start ups play a vital role to counter the unemployment problems and help the countries to promote their sustainable development by concentrate on five important factors such as financial capital, physical capital, human capital, social capital and natural capital. By concentrating on financial capital start-ups will help government to promote the macroeconomic planning through prudent fiscal management; in case of physical capital they promote the proper infrastructure facilities : by providing

good health and education to labour markets human capital will be enhanced: by make use of people's skills and abilities social relationships and networks will be widened; through the optimum utilisation of country's natural resources both commercial, non-commercial and ecological resources environmental capital will be achieved.

Review of Literature

A start up venture is a new business which is in the initial stages of operation, beginning to grow and is typically financed by an individual through own savings (hoostrap) or seed and equity funding. It is a young entrepreneurial, scalable business model built on technology and innovation (Babu& Sridevi., 2019). Startups are very much needed for developing countries like India because it will enhance the technology advancement, create opportunities for new marker, pro active approach for the society, promote self reliant India and create unique product and services (Kumar. 2021). Indian government conduct lot of programmes to

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ASSESSMENT OF ENTREPRENEURIAL SKILLS AMONG ARTS AND SCIENCE COLLEGE STUDENTS

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Abstract:

This study focused on the analysis of assessment of entrepreneurial skills among college students. Entrepreneurial skills are very important for students as well as professionals alike. The sample size was 150. The primary data were analysed percentages, and factor analysis. Entrepreneurship education is very important to the educated youth. Every entrepreneur, to be successful, requires entrepreneurship skills. Entrepreneurship without skills limits their growth potential. There is a need of the hour to wash the old methods of teaching entrepreneurship and aspire the students to become entrepreneurs. Thus, this paper focuses on assessment of entrepreneurial skills among the arts and science college students at Nagercoil in Kanniyakumari District.

keywords: Entrepreneurial Skills, Entrepreneurship Education, College Students, Business management skills

Introduction:

Entrepreneurial skills are those normally associated with being an entrepreneur, although anyone can develop them. Being a usual means starting and building their own successful business, but people with entrepreneurial skills can thrive within larger organizations, too. Entrepreneurship is both a science as well as an art. As a science, it lies in the proven process of planning and managing a business. As an art, it lies in a business's innovative thought, implementation, and growth. Entrepreneurial skills can encompass a large range of both soft and hard skills. Because of the many business roles entrepreneurs may take on, they may also develop a variety of different skill sets to accommodate the growth of their businesses and brands. Developing the following skill sets can also help them develop their entrepreneurial skills.

Business management skills

Successful entrepreneurs will most often rely on their business skills to manage and run a firm or brand. Developing their business management skills can mean building up their ability to multitask, assigning tasks to subordinates and making decisions regarding the health and profitability of their business.

Teamwork and leadership skills

Assuming leadership responsibilities and co-operating with a team are additional requirements for being a successful entrepreneur. As business owners, they will probably have to do both supervisory and teamwork functions, therefore they will need strong leadership abilities to inspire their employees.

Communication and listening skills

Entrepreneurs and business owners should also work on improving their communication abilities. Being able to communicate effectively can help them co-operate with others to improve their business, from active listening to talks during meetings, and increasing brand awareness. For

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..an Start-ups Issues and Challenges"- Post Pandemic Perspective

A STUDY ON HURDLES AND CHALLENGES FACED BY WOMEN ENTREPRENEURS IN KANYAKUMARI DISTRICT

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Abstract

This study focused on the analysis of the hurdles and challenges of women entrepreneurs. Women are expected to innovate, imitate or adopt an economic activity to be called women entrepreneurs. The increasing presence of women as entrepreneurs has led to significant business and economic growth in the country. The sample size was 200. The primary data were analyzed in percentages and factor analysis. The researcher suggested better educational facilities and schemes should be extended to women folk from the local authority. Thus, this paper focuses on the hurdles and challenges of women entrepreneurs in Kanyakumari district.

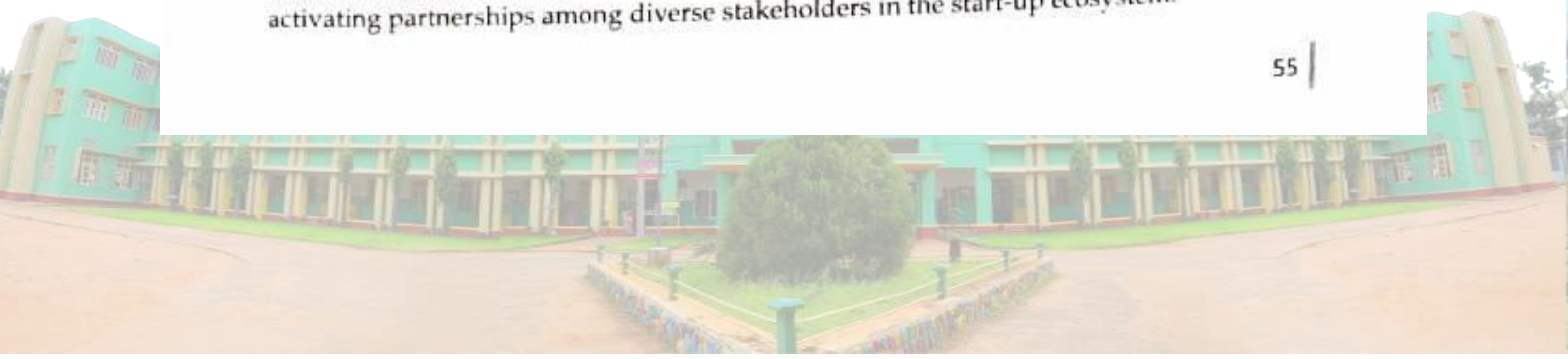
Keywords: Women Entrepreneurs, Hurdles, Challenges

Introduction:

World over 1/3rd of the entrepreneurial ventures is run by women entrepreneurs. Due to economic progress, better access to education, urbanization, the spread of liberal and democratic culture and recognition by society, there has been a spurt in women's entrepreneurship in India. Special incentives and drives have been created in India to bolster the growth of women entrepreneurs. Schemes like Start-up India and Stand-up also make special cases to promote entrepreneurial drive among women.

Women entrepreneurs may be defined as women or a group of women who initiate, organize and operate a business enterprise. Women are expected to innovate, imitate or adopt an economic activity to be called women entrepreneurs.

The increasing presence of women as entrepreneurs has led to significant business and economic growth in the country. Women-owned business enterprises are playing a prominent role in society by generating employment opportunities in the country, bringing in demographic shifts and inspiring the next generation of women founders. With a vision to promote the sustainable development of women entrepreneurs for balanced growth in the country, Start-up. India is committed to strengthening women's entrepreneurship in India through initiatives, schemes, creation of enabling networks and communities and activating partnerships among diverse stakeholders in the start-up ecosystem.



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A STUDY ON PROBLEMS AND CHALLENGES FACED BY THE VALUE-ADDED FISH PRODUCT CONSUMERS

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Abstract

Competition in both local and international markets for the food business requires the expansion of segregated products in order to meet the demand of more quality-stringent, health-conscious, and attribute-oriented consumers. This paper aims to find the problems and challenges faced by the value-added fish product consumers in Kanyakumari district. This study is based on subjective and objective knowledge of the health benefits of fish, value-added fish, and social and demographic characteristics. The study is conducted by 60 sample respondents. The researcher made a thorough analysis of the study on problems faced by the value-added fish product consumers with reference to Agastheeswaram taluk in Kanyakumari district. The data were collected with the help of a well-structured questionnaire. The outcome of this paper helps to give ideas to fish processing companies that are looking for profitable business opportunities in local or international niche markets as well as find the way of rectifying the problems and challenges of value-added fish product consumers.

Keywords: Fish products, problems faced by value-added fish product, value-added fish product consumer, fish, fish and fish by-products, fishery products, value-added fish products.

Introduction

Nowadays sustainability of business is questionable and challengeable. The sustainability covers the wide area such as facing the competitive environment, protecting the green environment and social well beings. The seafood processing and marketing has become competitive all over the world and exporters are switching to value addition to increase profit. Value-added future many opportunities to expand revenue, develop staff, and utilize resources.

Value-added seafood products can be an innovative one, such as natural bonded shrimp, a new package, eco-labelling, a new cut, a ready-to-eat product, a gourmet quality product, a formed seafood product with multiple formats, shapes, dimensions and flavor profiles, such as seafood medallions, among others. These products should be market at a lower cost to compete with or replace similar higher cost conventional product

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Antecedents of Entrepreneurial Intention: Entrepreneurial Education as a moderator and Entrepreneurial Self Efficacy as a mediator

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Abstract

This study aims to uncover the influence of entrepreneurial education and entrepreneurial self-efficacy on antecedents of entrepreneurial intention. Entrepreneurial intention refers to an individual's inclination or willingness to engage in entrepreneurial activities in the future. Antecedents are the factors or variables that precede and influence a particular outcome. The impact of antecedents such as personal characteristics and environmental factors on entrepreneurial intention can be moderated by entrepreneurial education. The quality and content of entrepreneurial education programs can either strengthen or weaken the relationship between antecedents and entrepreneurial intention. Additionally, entrepreneurial self-efficacy plays a mediating role by influencing the extent to which antecedents affect entrepreneurial intention. Higher levels of entrepreneurial self-efficacy can amplify the influence of antecedents on entrepreneurial intention. A conceptual model was developed to examine the factors influencing entrepreneurial intention and the role of entrepreneurial education as a moderator, with entrepreneurial self-efficacy as a mediator. A Stratified Random Sampling technique is used to choose the sample size. With the help of the empirical survey method, the structured questionnaire has been used in collecting data from 300 respondents from three districts in southern Tamil Nadu. The analyses were tested through SPSS, Smart PLS software. The findings of this study can contribute to both academic research and practical applications. Studying these relationships is valuable for policymakers, educators, and researchers, as it provides insights into how entrepreneurial education can be designed and implemented effectively to foster entrepreneurial intentions and behaviors among individuals. It highlights the importance of addressing both the psychological factors, such as entrepreneurial self-efficacy, and the educational environment to encourage and support aspiring entrepreneurs.

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Unveiling the Impact of Top Management Commitment on Green Bank Adoption Practices and Performance

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Abstract

In the past few decades, Green Banking has experienced significant growth all around the world. In light of the escalating risks associated with environment the concept of green banking (GB) has gained considerable prominence in recent literature on sustainable finance. Green adoption practices encompass a range of initiatives aimed at reducing environmental impact, promoting sustainability, and addressing climate change concerns. At the forefront of driving these practices is top management commitment, which plays a pivotal role in shaping organizational strategies and fostering a culture of sustainability. This study utilizes structural equation modelling (SEM) and the analysis of moment structures (AMOS) to examine the influence of top management commitment on green bank adoption practices and performance. The research aims to uncover the impact of top management commitment as a key factor in shaping the adoption of environmentally sustainable practices within the banking sector. The study investigates the mediating role of green bank adoption practices in linking top management commitment with organizational performance. Data was collected from a sample of 212 bank employees working at the national level using random sampling method and the hypothesized relationships were tested. The findings shed light on the significant role played by top management commitment in driving the adoption of green banking practices and highlight its implications for overall organizational performance.

Keywords: Green Banking, Top management Commitment, Green Adoption Practices.

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**The Impact of Green Consumption on Promoting Sustainable Lifestyles: A
Study in Southern Tamil Nadu**

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Abstract

The aim of this study is to comprehensively investigate and understand the impact of green consumption on the adoption of a sustainable lifestyle. Green consumption refers to the choices and behaviour of individuals or households that prioritize environmental friendly products and services. It involves consciously selecting goods and services that have a reduced environmental footprint throughout their life cycle, from production to disposal. A conceptual model was developed to test the relationships between the Impact factors of green purchase, green purchase Attitude (GPA), green purchase behaviour (GPB), and sustainable lifestyle (SL). A simple Random Sampling technique is used to choose the sample size. With the help of the empirical survey method, the structured questionnaire has been used in collecting data from 250 respondents from 50 towns in southern Tamil Nadu. The analysis was tested through SPSS, Smart PLS software. The findings of this study can contribute to both academic research and practical applications. From a practical standpoint, the study can provide valuable insights for policymakers, businesses, and organizations aiming to promote sustainable lifestyles through the encouragement of green consumption.

Keywords: Green consumption, Behaviour, Sustainable lifestyle, Purchase, environmental friendly.



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**Assessing Entrepreneurial Intention among Management and Commerce
Students**

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Abstract

The aim of the study is to assess the Entrepreneurial Intention of Commerce and Management students across various colleges in Kanyakumari district. Since Commerce and Management students are potential entrepreneurs who are professionally eligible to start a Business, so this study has been conducted among commerce and management student. A purposive sampling is used to select the participants from two colleges in Nagercoil. 81 students both Male and Female students administer questionnaires in the E-format for this Study. Entrepreneurial Intention was measured using Entrepreneurial Intention Questionnaire (EIQ) (Liñán& Chen, 2009).The result indicated that there is no differences of entrepreneurial intention among management and commerce students.



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"Indian Start-ups Issues and Challenges"- Post Pandemic Perspective

POST PANDEMIC IMPACT ON IMPULSE BUYING ATTITUDES OF COLLEGE STUDENTS IN ONLINE SHOPPING TOWARDS GOLD JEWELLERY IN KANYAKUMARI DISTRICT

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Abstract

Technology played a major role in online shopping during post pandemic period. College students bought not only inexpensive goods but also expensive goods like gold jewellery through online. Online purchasing are becoming a key instrument to achieve new growth opportunities, ultimately resulting in cost savings and in an increase in business volume. Thus the main purpose of conducting this research is to study the "Post pandemic impact on impulse buying attitudes of college students in online shopping towards gold jewellery in Kanyakumari district". Indian consumption patterns are slightly and slowly converging with the impact of pandemic. Now, anyone having an internet connection can purchase any product for any price in less than five minutes. So failure of marketers in providing required service often motivate customer to look for different avenues which are very easily available. No other commodity enjoys as much universal acceptability and marketability as gold jewellery. Today college students can buy the trendy and contemporary design jewellery pieces in less time in any outlets. Also they do not have to wait to wear it to the occasional marriage. They could now wear jewellery as part of their accessories to college or to parties or even gift to loved ones. Branded jewellery also broke the myth that 'which is precious must be pricey' as today branded jewellery is available in affordable price range. A well-structured questionnaire is prepared to collect the data from the respondents. A sample of 600 college students from Kanyakumari district is selected by using convenient sampling technique. This study will help the owners of the jewellery shops to know about the post pandemic impact on impulse buying attitudes of college students in online shopping towards gold jewellery. The nature of business has changed due to this pandemic. The COVID-19 pandemic has accelerated the shift towards a more digital world. During the pandemic, online consumption habits in Kanyakumari district have changed significantly, with a greater proportion of internet users buying expensive products. As the world responds to the coronavirus (COVID-19) pandemic, we're seeing a dramatic shift from in-person to online shopping.

Keywords: online shopping, consumer's behavior, jewellery, preference.

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POST PANDEMIC PERSPECTIVE: ADAPTION OF MOBILE WALLETS ON CONSUMING PATTERN OF GOLD JEWELLERY AMONG URBAN POPULATION OF NAGERCOIL TOWN

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Abstract

The main purpose of conducting this research is to study the "Post pandemic perspective: Adaption of mobile wallets on consuming pattern of gold jewellery among urban population of nagercoil town". Mobile wallet innovation have been very useful for people to buy gold jewellery during the pandemic. After the penetration of smart phones, service industries such as banking and non-banking financial institutions are taking the initiative to purchase self-service technologies through mobile applications. The need of mobile wallets is very important in pandemic because carrying liquid money is practically not safe. Consequently the use of mobile wallet has increased immeasurably. It makes buying, selling and basically transacting easier. Security issues tightening and reducing risk factors will automatically increase mobile wallet adoption on consuming pattern of gold jewellery. Gold is considered as a precious metal in the world and also a person wealth is measured in terms of how much gold he or she possesses. It is considered as a symbol of wealth and prosperity. Mostly Indians like to keep gold in the form of ornaments. Therefore this study assumes significance and the researcher wants to explore and analyses the consuming pattern, reasons for buying, and different types of gold jewellery preferred by the sample respondents. A well-structured questionnaire is prepared to collect the data from the respondents. A sample of 150 respondents from Nagercoil town is selected by using convenient sampling technique. The study aims to find out whether people are using mobile wallets to buy gold jewellery even after the pandemic.

Keywords: Adoption, mobile wallets, jewellery, preference.

Introduction

A mobile wallet is a type of payment service through which businesses and individuals can receive and send money via mobile devices. It is a form of e-commerce model that is designed to be used with mobile devices due to their convenience and easy access. A mobile wallet is also known as mobile money or a mobile money transfer. Instead of paying with cash, cheque, or credit cards, a consumer can use a mobile device to pay for a

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Dr.Niranjani & Dr.R.Venkatesa Narasimma Pandian



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A STUDY ON E-WALLET

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Abstract

In India, E-wallet are changing the traditional ways of making and receiving payment. Using e-wallet for payment is trending in India. The development of technology and technological advancement as made smartphone to become essential part of daily life of people. Smartphone users can make money transaction or payment by using application installed in phone. E-wallet is a way to carry cash in digital format. E-wallet on the other hand is an alternative of physical wallet. E-wallet with the support of mobile technology has allowed the owners of smartphone carry out many financial transactions and identification implements. E-wallet is an internet based payment system which allows users to make online transactions quickly and securely. After demonetization, our Indian economy is moving towards cashless transactions. E-wallet makes everyone's life comfortable to do online transaction or bill payment at anywhere at anytime. Effect of Covid-19 disturbs the mind of the people but it provides positive energy to the society to adjust the new system of cashless economy. Pandemics make tremendous growth of e-wallet user in India for last few years. The study was conducted in Nagercoil, kanniyakumari district of Tamilnadu. The data were collected with the help of well-structured questionnaire. The present study aims to explain the application and usage of e-wallet money endorsed by different companies and benefit of using e-wallet and various factors that affect the customers to adopt E-wallet and various risks and challenges faced by the users of E-wallet.

Keywords: E-Wallet, Awareness, Influencing factors of e-wallet, benefits and challenges faced by the users of e-wallet.

Introduction

In present world, due to technology development everyone have smartphone and it became essential part of daily life of people. The technological advancement in smartphones help as a source of communication device, socialized tool and even as a payment tool. Due to technology, smartphone users can use the smartphone to make money transaction or payment by using E-wallet (App) applications installed on the phone. E-wallet is used for various bill payment, fund transfer. E-wallet provides an easy transaction facilities and consumers are attracted because of one touch payment method which is more convenient and time saving. E-wallet refers to a software application in

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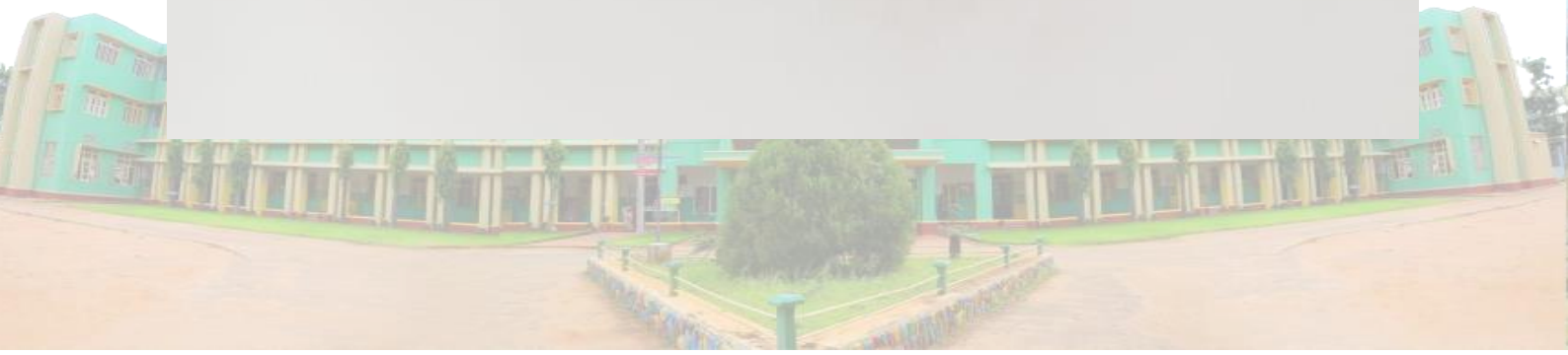


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A STUDY ON VARIOUS FINANCIAL INCLUSION SCHEMES

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ABSTRACT

Financial inclusion can involve a range of financial services, such as saving accounts, loans, insurance, and payment services, as well as financial education and other support. Governments, financial institutions, and other organizations around the world are working to promote financial inclusion through a variety of initiatives, such as expanding access to banking services, promoting digital financial services, and supporting financial literacy programs. The main purpose of the study is to examine the preference level of financial inclusion. The study was conducted in Kanniyakumari district of Tamil Nadu. The data was collected with the help of interview schedule by adopting convenience sampling method of 120 respondents. The findings highlighted that there is no significant difference between financial inclusion scheme and monthly income. The results indicate that financial inclusion is a crucial element of economic development and efforts to increase access to financial services and products.

Keywords: Financial inclusion, Schemes, Financial literacy, Savings

INTRODUCTION

Financial inclusion refers to the availability to both individuals and businesses of useful and cost-effective financial goods and services, including payments, transactions, savings, credit, and insurance, that are provided in a sustainable and ethical manner. It aims to promote economic development and reduce poverty by enabling individuals and businesses to save, invest, borrow, and make payments more efficiently and securely. Financial inclusion improves the nation's overall financial system. It improves the accessibility of financial resources. Most significantly, it makes saving more difficult for poor people living in both urban and rural locations. In this way, it consistently aids in the advancement of the economy. Due to their precarious situation, many impoverished people are prone to being duped and occasionally even exploited by wealthy landlords and unlicensed moneylenders. Financial inclusion can assist to change this harmful and dangerous scenario. In order to secure their limited financial resources for future needs, financial inclusion involves integrating low-income individuals into the official banking sector. There are many homes where farmers or artisans live without the required infrastructure to save the money they make after putting in so much labour.

FINANCIAL INCLUSION IN INDIA

The Indian Government has been adopting a number of unique programmes to promote financial inclusion. The goal of these programmes is to give social security to the less

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**DIGITAL FINANCIAL
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ASSESSING FINANCIAL KNOWLEDGE OF WORKING WOMEN

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Abstract: Working women are more motivated to save and invest their money. They have the ability to handle their finances more wisely and effectively. Also, they are motivated by their colleague's involvement in investment activities. In India, women are now active in all spheres of life, including politics, science and technology. As circumstances have evolved and their knowledge has expanded, they have started to diversify their investments across various opportunities. The researcher collected the data from the working women of Kanniyakumari district on the basis of convenient sampling. The sample size selected for the study is 250 respondents. Each and every respondent are interviewed with the help of questionnaire. Today's financial literacy concerns are not exclusive to India but also extend to developed nations throughout the world. This study seeks to uncover the financial knowledge that working women possess, and how it impacts their financial decisions. It also explores the potential for organizing and engaging with financial advice and education tailored to working women's needs.

Key words: Financial knowledge, finance, investment

1. INTRODUCTION

Financial literacy has emerged as one of the world's top objectives today, as it is directly related to the economic growth of a country. Financial literacy is the set of knowledge and skills that enables an individual to use all of their financial resources wisely and effectively. People who are financially literate are frequently taught how to make important financial decision. It is important because it equipped one with the knowledge and skill to manage money effectively. Without financial literacy, one's actions and judgements regarding savings and investments would lack a solid foundation. One can manage their finances effectively with the aid of financial literacy, which improves one's grasp of financial principles. Also, it aids in sound financial decision-making, stable financial management, and stability. Also, financial literacy offers comprehensive knowledge of financial education and numerous tactics that are essential for financial success and progress. Financial literacy is interchangeably used with the terms, "Financial education" or "Personal Finance Management".

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EXPLORING FINANCIAL RISK MANAGEMENT STRATEGIES

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ABSTRACT

Financial risks are a major concern for companies, governments, and other organisations that operate in a volatile and uncertain financial climate. Organizations can reduce the likelihood and effects of such dangers and can better manage their financial performance and stability by recognising and evaluating potential risks, as well as by putting their efforts to effective risk management strategies. The goal of financial risk management is to identify, control, and reduce exposure to a variety of hazards associated with using financial services. The main aim is to study the various types of financial risk which occur in the environment and the effective ways to manage the financial risks.

Keywords: Financial risk, Investment, Financial risk management, Strategy

INTRODUCTION

Every company faces the possibility of risk, but how they manage it or deal with it is essential for avoiding actual revenue leakage. A company entails numerous risks. But when it comes to business operations, financial risk has the biggest influence. Cash flows are most affected by financial threats. Financial risks are dangerous or threats that may have an impact on the stability or performance of a company, Government, or other organization's finance. These risks may be caused by a variety of factors, such as market alterations, prevailing economic circumstances, or Governmental changes. According to Dun and Bradstreet, financial risk is one of the different kinds of investment risk and refers to the possibility that a company's cash flows won't be sufficient to cover its debts and other financial obligations. Therefore, the degree of financial risk is more closely related to the amount of debt a business takes on to fund its operations than it is to the operations of the business itself. A company is more likely to default on its financial responsibilities the more debt it owes. Therefore, increasing debt or financial liability also raises a company's degree of financial risk.

STATEMENT OF THE PROBLEM

Risks can come from many different sources, and their effects can be extremely unpredictable and challenging to measure. Financial risks can be hard to anticipate and predict is one of the main difficulties in managing them. Managing financial risk is a difficult and complex task that calls for coordinating the knowledge and resources of many different stakeholders, including finance experts, risk managers, and outside advisers. Hence, an exploratory study has been identified and the researcher has formulated the research problem as "Financial Risk Management- An Overview".

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A Study on the Emotional Intelligence and Employee Performance of Non-Banking Financial Institutions

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Abstract:

Emotional intelligence is the key to the success of every one's personal and professional life. So the success depends upon the ability of the people to manage their emotions and the ability to understand the emotions of others. Employees who are emotionally inept have difficulty managing their emotions. As a result, they frequently act rashly, believing that the consequences of their actions will have no effect on them or those around them. The study's main goal is to examine the relationship between emotional intelligence and employee work performance. Out of a total of 100 responses, 74 were complete. Respondents were chosen using a Snowball sampling technique rather than non-probability sampling. Employee performance is improved by the Emotional Intelligence factor.

Introduction

The concept of Human Resource Management has undergone a paradigm shift from a management role to a broader strategic role in organisations. It was designated in the beginning phase of the discipline of management as Personnel Management. From the veracity of human relations and interactions in the organisational context, this concept has got enrichment as a prominent function of the management termed as Human Resource Management. The legendary author in Management Peter Drucker has rightly stated that one cannot manage human beings but develop and lead them (Peter Drucker, 1999). This leads to the development of a new paradigm for the human resource component in the management of the organisations in the name of Human Resource Development. The latest development in the field of Human Resource Management for emphasizing its strategic role in contributing growth of the firms is known as Talent Management. This has blended with emotional quotient replacing intelligent quotient as the dominant predictor of organisational success. This transformational and evolutionary process on the relevance of emotional quotient

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CUSTOMERS PREFERENCE TOWARDS ONLINE MARKETING

Dr.M.Charles Dayana

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Holy Cross College (Autonomous), Nagercoil.

Abstract

E-Commerce can be defined as the process of transferring goods and services between a buyer and a seller using the internet as a medium of trade. Every year, a new digital trend emerges, and marketers must remain on top of the developments in order to readily embrace new technologies and stay a head of the competition. The objective of the study is to study the theoretical framework of consumer Preference towards online marketing, analyses the effectiveness of online marketing among the consumers of Nagercoil Town and analyses the performance of online market and examine the various opportunities and threats. Sample Design is for the study total of 80 sample size has been selected Convenient sampling comes under the non-probability sampling method which means it does not provide equal opportunities to all the customers. Tools used for data analysis is the Primary data collected from 80 respondents were coded, classified and analyzed using Various statistical tools The tools used for analysis of primary data were descriptive statistics like Garrets ranking, Likert's 5 points scaling technique, Weighted average methods, percentage and tables, etc.

Keywords: Online shopping, Marketing, Consumer Awareness, Level of Satisfaction.

1. Introduction

Online marketing is any type of marketing message which gives information with the help of internet. That means it could appear in a web browser, search engine, social media, media device and even in e-mail. Internet can be used as a marketing medium where promotional messages appear on the computer screen since the communication software (browser) reveals sufficient information about the site visitors. online marketing can be custom tailored to match the user's preference. Online marketing has been rapidly in the last decade. By two thousand, online marketing spending in the united states reached by \$8.2 billion dollars (Hollis 2005). These number have increased to \$12.7 billion as more people are connected and spend more time on the online. Additional devices (such as mobile phones and televisions) are able to provide further internet connectivity. The rapid technology development and the rise of new media and communication channels tremendously changed the marketing

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A STUDY ON AWARENESS OF INDIAN GOVERNMENT SCHEMES TOWARDS
ENTREPRENEURS IN NAGERCOIL.

Adeline Judisha.J

II M.com

Holy Cross College (Autonomous), Nagercoil.

Dr.M.Charles Dayana

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ABSTRACT

An entrepreneur is someone who starts a business and face financial risk with the intention of making money. This survey details the degree of scheme awareness among entrepreneurs. The goal is to investigate the degree of knowledge about the programs of federal government schemes offers to entrepreneurs. This information was gathered from a structured survey that had 75 respondents. The researchers have applied simple statistical tools like percentage Analysis, Garrett Ranking method and liker's five point scaling techniques to analyze the collected data. In this study both primary and secondary have been collected from entrepreneurs in Nagercoil town. Collected data were analysed with the help of statistical tools and suggestions are given based on findings.

Keywords: Entrepreneurs, government schemes, awareness.

INTRODUCTION

An entrepreneur is an individual who creates a new business, bearing most of the risks and enjoying most of the rewards. The process of setting up a business is known as entrepreneurship. The entrepreneur is commonly seen as an innovator, a source of new ideas, goods, services, and business/or procedures. Nowadays, entrepreneurs invest a small amount in their business initiatives and wait for financial support from the government to stabilize their operations. The Government of India, considering the significance of entrepreneurship and their contribution towards country's growth and prospects, has introduced new schemes for helping entrepreneurs. The Government promotes India's entrepreneurial ecosystem by providing easy access to loans, networks, markets and training. The Government of India has introduced various schemes for entrepreneurs like E-Biz Portal, Support for International Patent Protection in Electronics & Information Technology (SIP-EIT), Prime Ministers

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A STUDY ON ADDICTION TO SMARTPHONES AMONG THE COLLEGE STUDENTS WITH SPECIAL REFERENCE TO NAGERCOIL.

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ABSTRACT

Smartphones have become an indispensable part of our daily lives over the past decade. Mobile learning has also emerged as a new technological achievement and educational tool that provides both educators and learners with ample opportunities. But excessive use of smartphones by students could result in mental, health risk and who use too much smartphone have difficulty in paying attention and exhibited attention deficit-hyperactivity disorder symptoms. The purpose of this research project is to identify the level of smartphone addiction among college students and to analyse whether there is any significant relationship between Education and smartphone usage duration. The study is based on both primary and secondary data. The researcher has selected 100 sample respondents from the college students in Nagercoil. Simple random sampling technique under probability method was used to collect the information. Well-structured questionnaire was used to collect primary data from respondents. The secondary data regarding this study is collected from books, magazines journals, relevant projects and internet. Garret's ranking method and chi square were used to analyse and interpret the collected data. The researcher gives suggestions on the findings.

Key words: Smartphone, Addiction, College students

INTRODUCTION

In the modern world, technology plays a significant role in every aspect of society, including education. When one spends more time on social media or playing games than interacting with one's people, or one can't stop oneself from repeatedly checking texts, emails, or apps is considered as smartphone addiction. It is widely acknowledged that smartphone addiction not only adversely affects mental health, but can also be detrimental to learning, life, and physical health. Smartphones addiction, sometimes colloquially known as "nomophobia".

Review of Literature

- Yebuda Wacks and Aviv M. Weinstein (2020-2021) says that excessive use of the smartphone has been associated with impaired cognitive functions and mental health problems. There are several findings on the association between using smartphones, need of constant stimulation, deficit in everyday cognitive functioning and brain changes which should send alarm signals to clinicians and educators in the modern world.
- Timothy J. Legg (2019) says teenagers tend to overuse their smartphones more than other age groups. Studies show the earlier a teen starts using a smartphone, the higher the risk of problematic use patterns.
- Dipak K Dash (2019) According to his article drivers who use smartphones while driving are four times more likely to be involved in accidents, according to the World Health Organization.

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Harnessing the Power of Financial Literacy and Sustainable Investments

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Abstract

Financial literacy is essential for individuals to navigate the complexities of sustainable investments and make informed decisions that align with their financial goals and values. It empowers individuals to contribute to sustainable development while pursuing financial well-being. With the increasing focus on sustainability and responsible investing, understanding the role of financial literacy in promoting environmentally and socially conscious investment decisions becomes crucial. This study aims to investigate the potential of financial literacy in facilitating sustainable investments. First, a conceptual model is constructed to provide a framework for the analysis. The research explores the relationship between financial literacy and sustainable investments, considering various dimensions such as financial behavior, financial capability and investment strategy. This study adopts a quantitative approach, employing a random sampling method to collect survey data from 318 individuals. The collected data is then analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) as the analytical framework to examine the relationship between financial literacy and sustainable investments. The findings of this research provide valuable insights into the potential of financial literacy in harnessing the power of sustainable investments, contributing to both financial well-being and the achievement of environmental and social objectives.

Keywords: Financial literacy, Sustainable Investments, Investment strategy

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Exploring the influence of Electronic Word of Mouth (EWOM) in unravelling consumer buying behaviour relationship

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Abstract

In today's fast-paced and technology-driven world, the use of mobile phones and technology has become an integral part of people's lives. It is no longer just a want but a necessity for individuals to rely on these devices not only for work-related tasks but also for their day-to-day activities. The widespread use of social media platforms like Instagram, YouTube, Twitter, WhatsApp, and others have further expanded and reach and engaged the individuals in various business endeavours. To conduct the study, a sample size of 220 participants has been selected, and empirical data will form the basis of analysis and conclusions. By examining the impact of EWOM on consumer buying behavior, the study aims to provide valuable insights into the factors that shape purchasing decisions in the context of social media platforms. The findings from this study will contribute to the existing body of knowledge in the field of consumer behaviour, particularly in the context of online retailing and social media. It will help the retailers and marketers gain a deeper understanding of the influence of EWOM towards consumer attitudes, preferences, and decision-making processes. This study Employs Structural Equation Modeling (SEM) and the analysis of moment structures (AMOS) for data analysis and interpretation using simple random sampling and the hypothesized relationships were examined and assessed for their validity in this study. Overall, this study seeks to bridge the gap between EWOM and consumer buying behaviour, offering valuable insights for businesses operating on social media platforms and contributing to the advancement of knowledge in the field of marketing and consumer behaviour

Key words: EWOM, Behaviour, Consumer, Social Media

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**NATIONAL CONFERENCE PROCEEDINGS ON MULTIDISCIPLINARY RESEARCH
PERSPECTIVE AND TECHNOLOGICAL ADVANCEMENTS IN DIGITAL INDIA**

**CUSTOMER SATISFACTION OF BANKING SERVICES WITH REFERENCE TO
COMMERCIAL BANKS IN THIRUVANANTHAPURAM DISTRICT**

Raseena and Dr. M. Gnana Muhila

Department of Commerce

Holy Cross College (Autonomous), Nagercoil – 4

Affiliated to Manonmaniam Sundaranar University, Tirunelveli - 627012

ABSTRACT

The researcher conducted banking services of commercial bank interviewing of its 120 customers scrutinized to the banking needs of Thiruvananthapuram District. The collected data were analyzed by using descriptive statistics. The findings of the study suggest that there are a number of problems hindering the smooth delivery of the banking services. The network problem for instance is the major obstacle in the check clearing operations. Besides, in the loan operations the delays of the loan approval is the major problem. In the electronic banking services, customers responded that the benefits they obtained are limited.

Key words :Customer satisfaction , electronic banking services.

Introduction

Banking services mainly include accepting deposits, lending money, facilitating transactions, and offering various financial products like savings accounts, loans, and credit cards. Banking plays a crucial role in the economy by facilitating the flow of money and enabling economic activities. Banking is an industry that handles cash, credit, and other financial transactions. Banks provide a Safe place to Store extra cash and credit. They offer savings accounts, Certificates of Deposit, and checking accounts.

Review of literature

According to Shekhar (1998), the primary function of a commercial banker is that of a broker and a dealer in money. By discharging this function efficiently, a commercial banker renders very valuable service to the community by increasing the productive capacity of the country and there by accelerating the pace of economic development. A commercial bank may also act as a trustee, executor, administrator and attorney. The business of banks acting as trustees, executors, administrators and attorneys has continuously expanded with considerable usefulness to their customers (Paul, 2002).

The advancement of information technology today's banking has become simple, speedier and readily accessible through various devices such as personal computers, mobile phones, etc. The electronic banking services include Automated Teller Machines (ATM), Internet Banking, Tele Banking, Electronic Credit cards, anywhere banking, etc. (Perry, 1999). Kulkarni and Kalkundrikar (2002) discussed the importance of a sound system of commercial banking for a developing country as accumulating capital, provide assistance to innovation activities, and help finance the priority sectors.

According to Gil et.al, 2008, in contrast to products, customers are not really able to appraise services before the service process takes place. The contact with the service provider and the customers is the key in the evaluation of service performance. During these encounters, the customer is able to get an impression of the way the company provides its services. The





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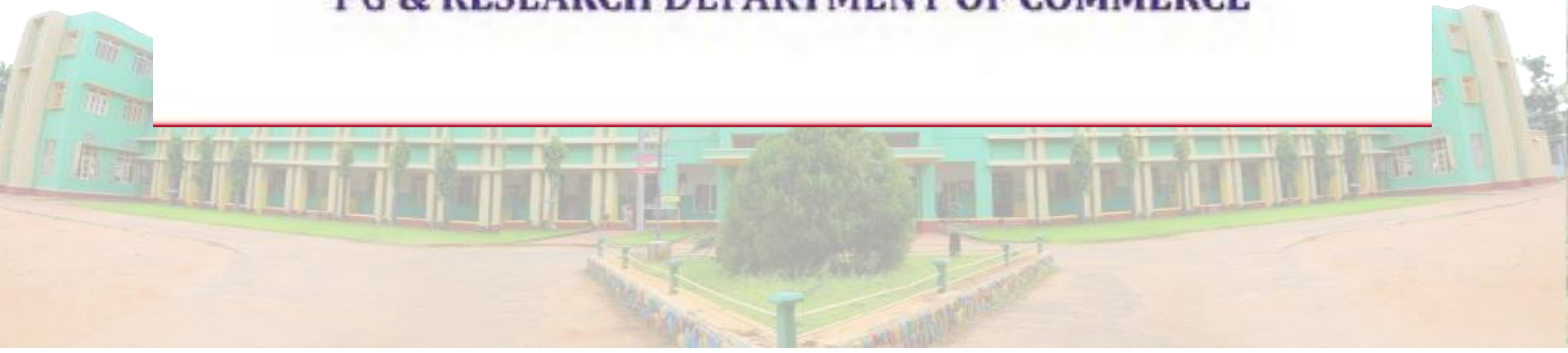
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TRAINING AND DEVELOPMENT IN BANKING SECTOR

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Abstract

In the present scenario of economic reforms and emerging challenges the banking industry cannot rule out the importance of training programs. It is through training and skill development that the banks meet out their profitability and productivity. Training has to be initiated as training needs assessment which forms the basis for designing, budgeting and implementing the training program. Employees also reported a high level of satisfaction with the training, with most indicating that they found the training to be interesting and engaging.

INTRODUCTION

Human resource management is of great importance to an organisation. People and their active participation help an organisation survive and grow. Organisation various functions are carried out through the coordinated efforts of its employees and workers. Therefore, it is necessary to plan, acquire, develop, manage and retain a satisfied workforce for the successful progress of any business. Human resource management strategies include training and development. Training and development are an attempt to improve an employee's performance in an organisation by increasing his or her knowledge and abilities through learning or altering attitudes.

OBJECTIVE OF THE STUDY

- To identify the different types of training given to the employees.

REVIEWS

Sunil Das B (2018) Analyze the training and development of bank employees. The study discloses to identify the training policies and objectives followed by the banks and to ascertain the training areas and the adequacy of the training infrastructural facilities in banks. The study is based on secondary source of data. The study concluded that the importance of training and development of employees in direct increase in the profitability of organizations and the development of the countries.

Maninder Kaur (2016) conducted an empirical study on effectiveness of training programs among women employees in public and private sector banks. The study is an attempt to understand and compare the patterns of participation of women in private and public banks and it also measure the effectiveness of training programs and growth of the banks. The study is based on primary data collected from various private and public sector banks in Delhi. Data is collected through questionnaire filled by the bank employees. The research opined that an employee who are trained regularly are well motivated and have enhanced confidence, self-esteem, knowledge and skill.

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CUSTOMER SATISFACTION OF DIGITAL MARKETING WITH SPECIAL REFERENCE TO THIRUVANANTHAPURAM DISTRICT

Raseena

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High level promoting, furthermore called online displaying, is the headway of brands to connect with potential clients using the web and various sorts of mechanized correspondence. This integrates not simply mail, online diversion, and electronic advancing, yet moreover message and sight and sound messages as a displaying channel. The methodologies and techniques used for mechanized exhibiting consolidate email, online diversion, show publicizing, webpage plan improvement, and anything is possible from that point. The objective of electronic promoting is to show up at expected clients through the channels where they contribute energy examining, looking, shopping, or blending on the web. All over gathering of the Internet for business and individual use has delivered many new channels for advancing and exhibiting responsibility, including those referred to beforehand. There are furthermore many benefits and challenges incorporated into web publicizing, which uses fundamentally progressed mediums to attract, interface with, and convert virtual visitors to clients.

Keywords: Digital Marketing, Customer Satisfaction.

Introduction

Modernized advancing shifts from standard exhibiting, which has commonly included mediums like print, announcement, television and radio takes note. Before cutting edge exhibiting channels emerged, the cost to promote things or organizations was often prohibitively expensive, and usually difficult to measure. Consider public television advancement campaigns, which are assessed through customer place social events to choose levels of brand care. These systems are similarly not fitting to controlled experimentation. Today, anyone with an online business (too as most separated associations) can participate in web advancing by putting forth a website and building client getting attempts at essentially zero cost. Electronic displaying accepts a fundamental part in this ferocious world and considered as one more sort of advancing and allowed new opportunities to associations to do associations for 24 hours in seven days. It helps with contacting the person very close. Automated exhibiting has been seen as one more

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Enhancing Wellness and Job Satisfaction of Migrant Labourers in the Hazardous Working Environments

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Abstract

This study examines the relationship between working conditions, job satisfaction, and wellness among migrant labourers in hazardous environments. Using a sample size of 170 through simple random sampling, both primary and secondary data were collected. Statistical analysis techniques including AMOS and SEM were utilized. The findings reveal a significant negative link between working conditions and job satisfaction for migrant labourers in hazardous environments. This emphasizes the importance of addressing unfavourable working conditions to enhance job satisfaction and overall wellness. Implementing strategies to improve working conditions can significantly improve the well-being and quality of life of migrant labourers. This research offers valuable insights for policymakers, employers, and organizations concerned with migrant labourer welfare. By prioritizing working condition improvements in hazardous environments, job satisfaction and wellness can be enhanced. Ultimately, this contributes to the overall well-being and quality of life of migrant labourers working in challenging conditions.

Keywords: migrant labourers, hazardous environments, working conditions, job satisfaction, wellness



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Enhancing Quality of Work Life: The Key to Employee Commitment and Job Satisfaction in Banks

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Abstract

Purpose: The goal of this study is to determine how work-life balance (WLB) and other factors, such as job satisfaction, work-family conflict, family-work conflict, emotional exhaustion, employee engagement, and employee commitment, are related to these factors. Further research is done into the function of personal development as moderators in the connection between WLB and its effects.

Design/Methodology/Approach: The authors used simple random sampling, structured survey instrument, 478 respondents from bank employees of private and public sector banks were surveyed, and the data were analysed after checking the instrument's psychometric properties by performing confirmatory factor analysis. Analyses by SEM and SPSS Tools. Hierarchical regression was used to test the hypotheses.

Research Limitation/ Implications: Common method bias and social desirability bias could be potential limitations, as with any survey research. But reasonable precautions are made to reduce these biases. Practical Implication: The study contributes both literature on human resource management and practicing Bank Employees.

Originality/Value: This study provides new insights about the consequences of WLB through moderating role of personal Development. The conceptual model the authors developed and tested is according to the authors' knowledge, the first of the model's kind.

Keywords: Quality of Work Life, Work Family Conflict, Family Work Conflict, Personal Development, Emotional Exhaustion, Employee Engagement, Employee Commitment and Job Satisfaction.

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Social Media Advertisements: Influence on Buying Behaviour of College Goers

Jani Mercybai J. *Assistant Professor, Department of Commerce, Holy Cross College (Autonomous), Nagercoil, Kanyakumari District, Tamil Nadu, India.*

Abstract

In the 21st century, the manufacturer of products and services are moving from traditional to modern form of advertising. Some digital advertisements play a vital role in shaping the behaviour of their users. Social media advertising is a form of modern advertising and it links manufacturers to a large number of consumers across the globe through digital marketing strategy which provides plenty of profitable openings to the business to boost the growth of businesses. Most of the leading companies are now using social media as an effective platform to advertise their products as well as services. Advertising through social media has created a simple and quick way for business to display their products or services with information, offers and discounts. Hence the advertisers of social media use advertisements as a weapon to target the audience with regard to purchase decision. This paper also suggests that advertisers have to be very careful in not giving exaggerated facts and create atmosphere of at ease when they watch the advertisements.

Key words: Social media advertisements, Process of social advertisements

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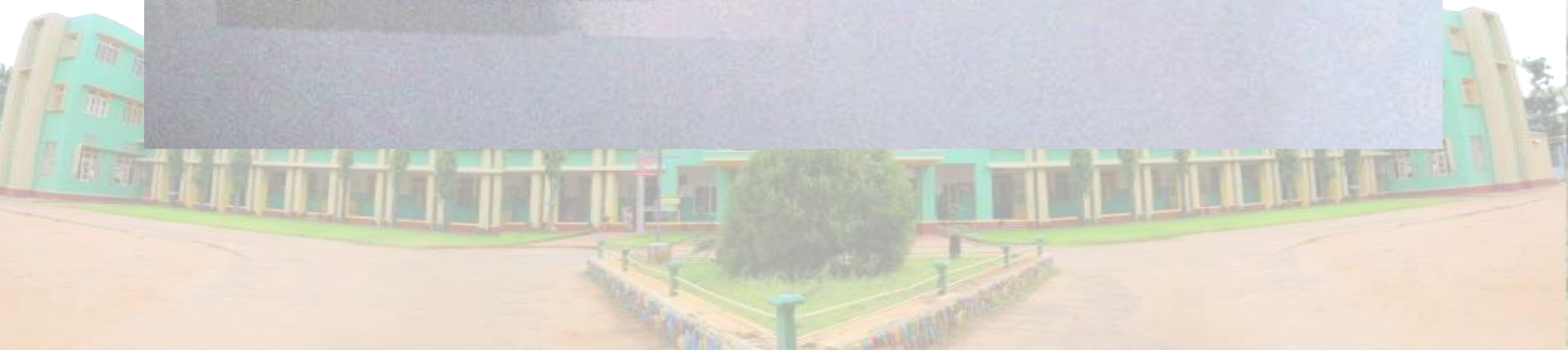
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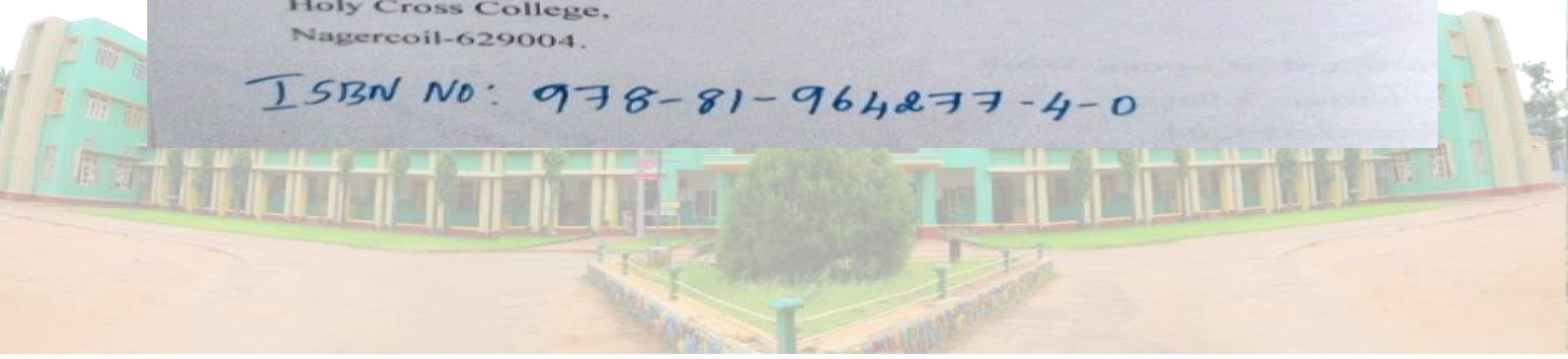
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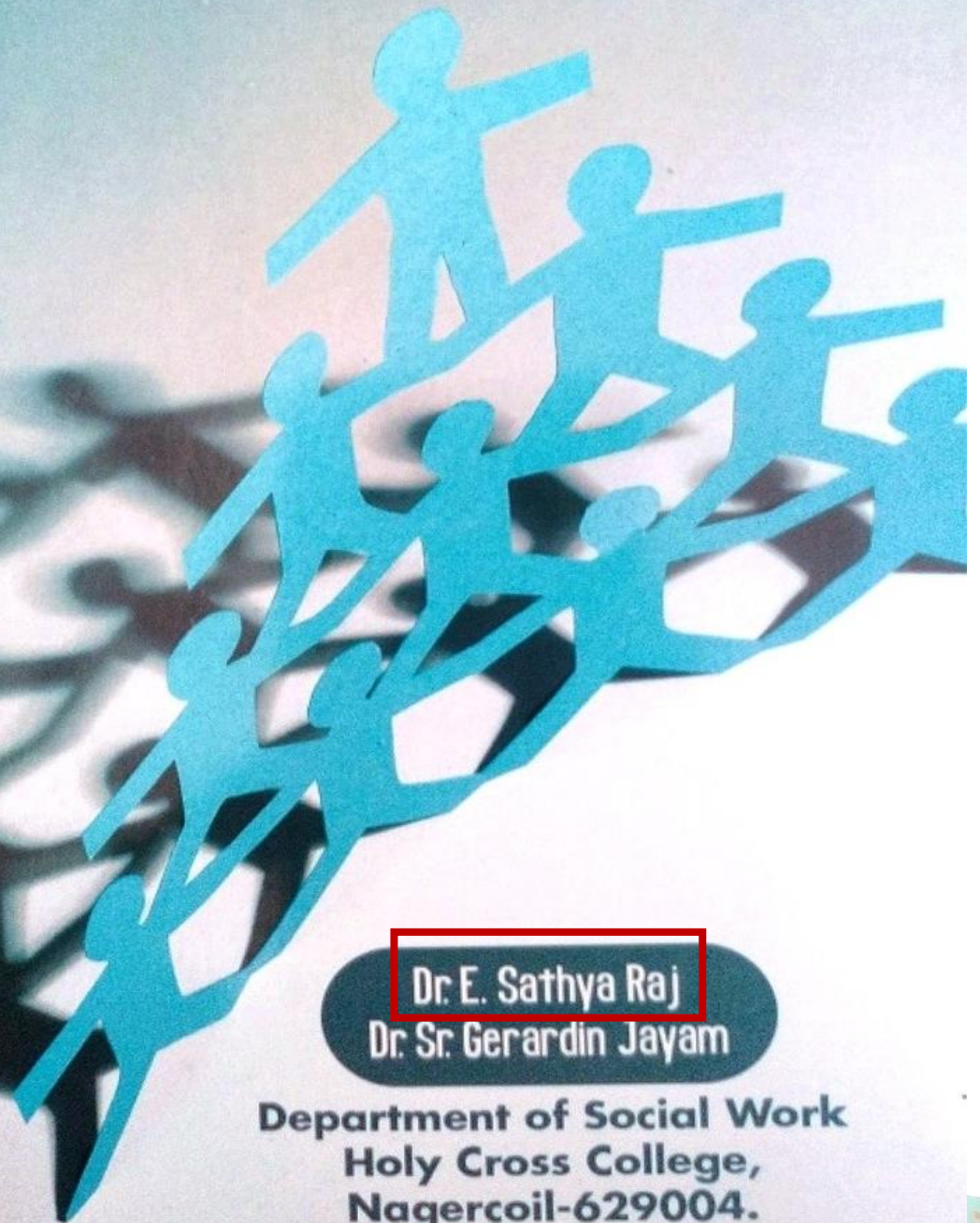


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**Proceedings of the
Two Days International Conference
on
Innovative Trends
in Multidisciplinary Research
7th & 8th July 2023**

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The Efficacy of Social Work Counsellors in a De-Addiction Centre

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Alcoholism is a severe problem in a large number of families in India. In India nearly 30% of men and 5% of women are regular consumers of alcohol. India has been identified 3rd largest market for alcoholic beverages in the world and it is an attractive market for multi nationals. Sale of alcohol has been growing steadily at 6% and is estimated to grow at the rate of 8% per year. Abuse of alcohol and the consequent problems accompanying it, have become one of the major issues of concern in Indian villages. Alcoholism results in deterioration in physical health, conflicts within the family, problems on the job, violence and breakdown of the moral values, lack of awareness of magnitude of the problem, coupled with lack of the treatment facilities which results in the alarming growth of the problems in rural & urban areas. Now-a-days the de-addiction centres play a vital role towards upliftment of alcoholic dependents. They involve themselves in Detoxification, Intervention, Counselling, and Follow-up. The paradigm shift of focusing from individual to family towards alcohol dependence identified in various research studies explains the family attitudes, behaviour and coping are the major contributors in treatment and rehabilitation of addiction. Since alcohol dependence contributes significantly to the burden of alcohol dependence syndrome, it is imperative to examine the families' response and its own coping strategies to overcome the difficulties posed by the person with alcohol dependence. The Objectives of this study intends to find out the role of social worker in de-addiction centres, to find out the awareness programmes in the centres, to study the screening and motivation of client to take help, to access the aftercare treatment through counselling, to provide the suitable suggestions. Thus the researcher has made an attempt to study the efficacy of social work counsellors in de-addiction centre among the alcoholic dependent Individuals those who are getting treatment in the De-addiction Centres in Tamil Nadu. The researcher proposed to conduct this research in the Sri Ramakrishna Seva Nilayam, Triunelveli, De-addiction Centres of Tamil Nadu working under Ministry of Social Justice & Empowerment. Hence the researcher plans to adopt Descriptive Research Design for the study. By using Simple Random sampling the researcher intends to collect samples from the de-addiction centres. Based on the observations the findings and suggestions will be provided.

Key words: *Alcohol, alcohol abuse, Treatment, counselling and addiction*

Introduction

Alcohol and drug abuse has been showing an increasing trend in India. Alcoholism remains a serious and prevalent health problem in contemporary society. The disease concept of alcoholism has gained popularity over the years. According to the variability of drinking all alcoholics pass through identifiable stage of the disease. How true! Once man starts to drink, there is no end and then drink not only takes the man but it also takes the entire family along. Alcoholism has been an important problem of global concern. The impact of alcohol not only disturbs the physical health of an individual it also affect the people who surround him.

The World Health Organization (WHO) estimates that there are about 2 million people worldwide who consume alcoholic beverages and 76.3% million with diagnosable alcohol use disorder

