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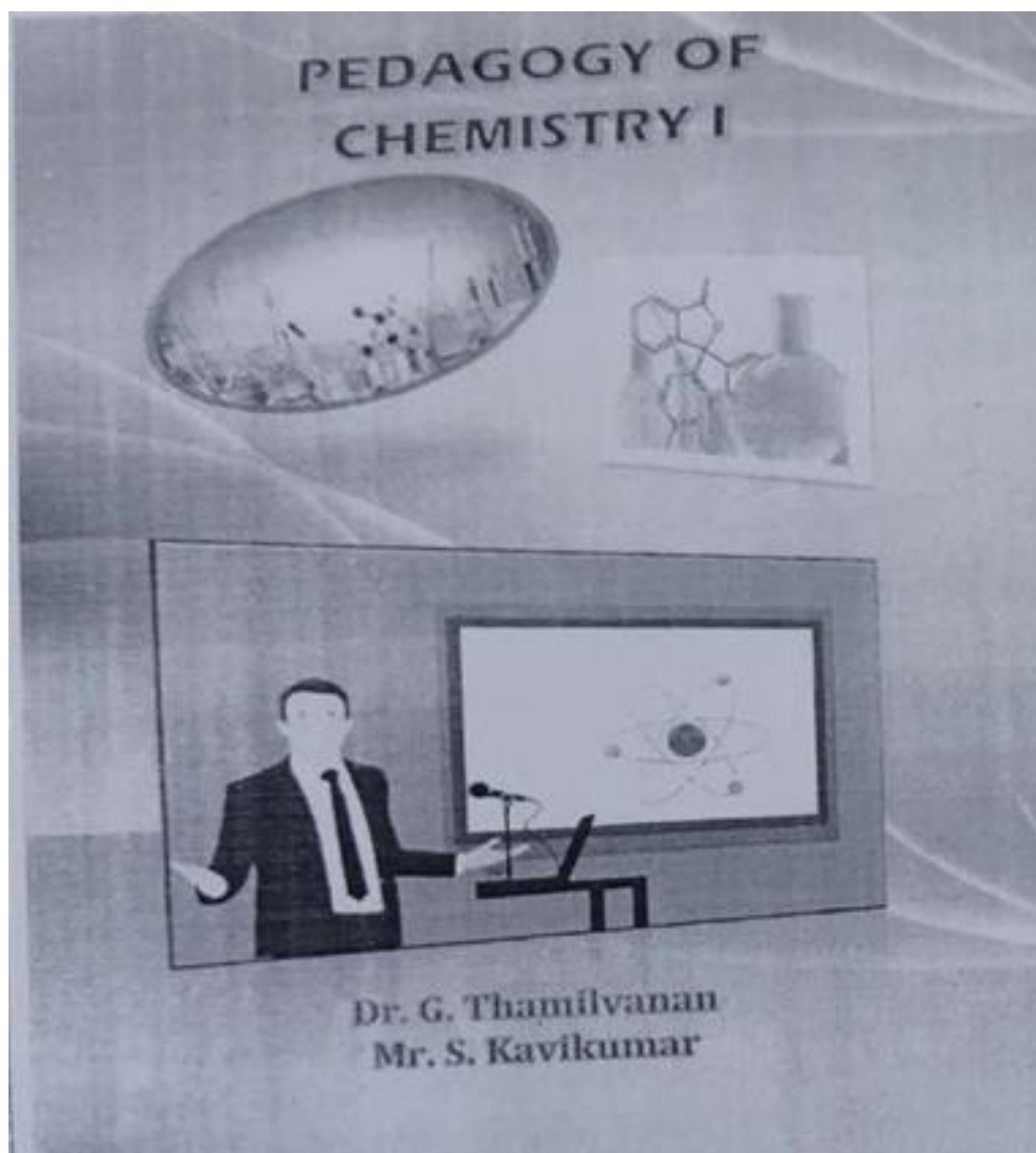## 3.4.6 - BOOKS AND CHAPTERS PUBLISHED & PAPERS IN NATIONAL / INTERNATIONAL CONFERENCE - PROCEEDINGS

2020 - 2021

PART III

2020 – 2021

Sl. No	Name of the Teacher	Title of Books and Chapters Published & Papers inNational/International Conference-Proceedings	Page No.
25.	G. Thamilvanan, S. Kavikumar	Pedagogy of Chemistry-I	3,4
26.	G.Thamilvanan, S. Kavikumar	Pedagogy of Chemistry-I	5,6
27.	S. Kavikumar, G. Thamilvanan	Basics of E-learning	7
28.	G.Thamilvanan, K. Mohanasundaram	Perspective and Challenges in Integrated Teacher Education	8,9
29.	Kumar N., Balamurugan A., Balakrishnan P., Vishwakarma K., Shanmugam K	Biogenic Nano-Particles and their Use in Agro-ecosystems - Biogenic nanomaterials: Synthesis and its applications for sustainable development	10
30.	Kumar N., Balamurugan A., Shafreen M.M., Rahim A., Vats S., Vishwakarma K	Biogenic Nano-Particles and their Use in Agro-ecosystems - Nanomaterials: Emerging trends and future prospects for economical agricultural system	11
31.	Ruby, D., Jeyachidra, J., Narayanan, A.E.	Wireless Networks	12,13
32.	Ruby D, Arumugam S, Jeyachidra J	Post COVID-19 Business Ecosystem & its Implications on Society	14,15
33.	Dr.D.Umamaheswari, Dr.R.Prakash & Ms.T.Valli	Income Tax & Tax Planning - I	16
34.	Ms.K.Suganthi & Ms.T.Valli	Hand Book of Business Organisation and Management	17
35.	Dr.S. Suppiah	Bamboo Reinforced Panels for Fence Walls	18,19
36.	Dr KVR Rajandran	Teaching Methodology: Maximising the students' performance and Teachers' abilities	20

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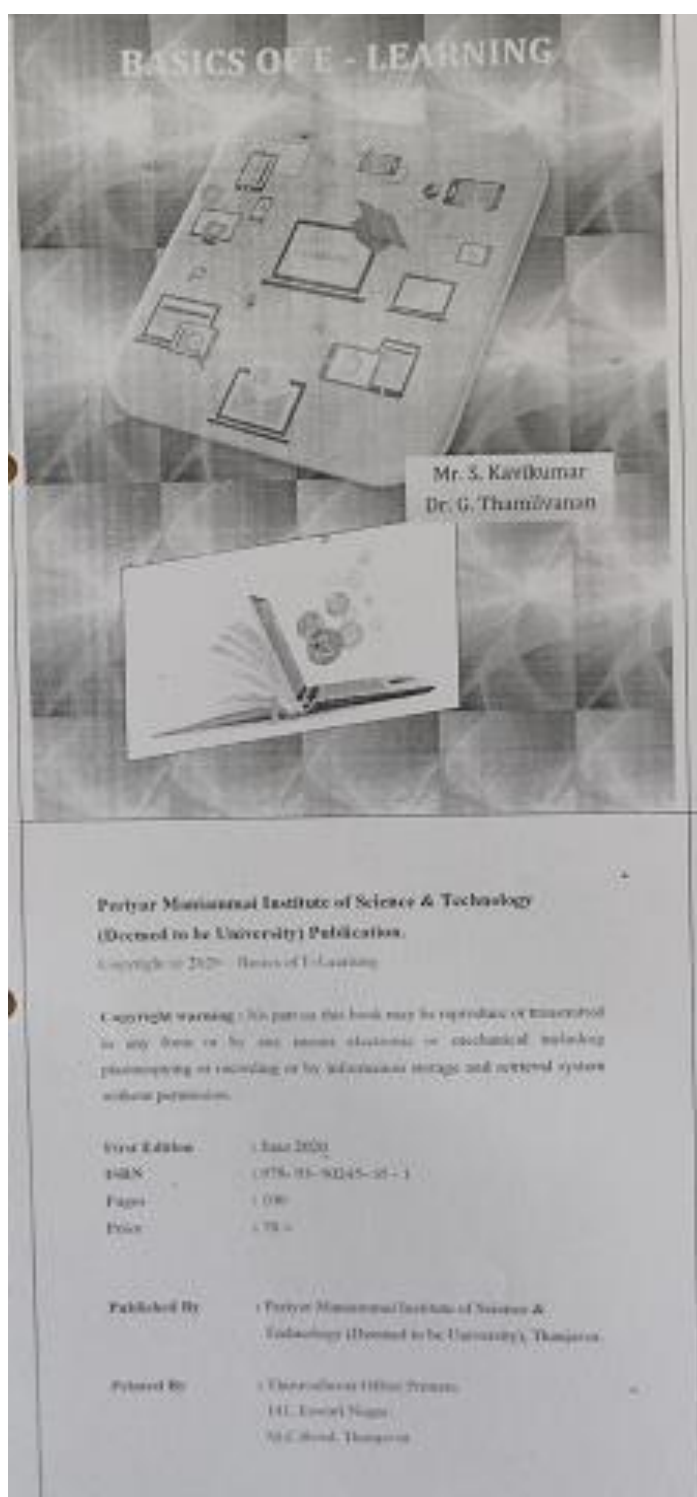
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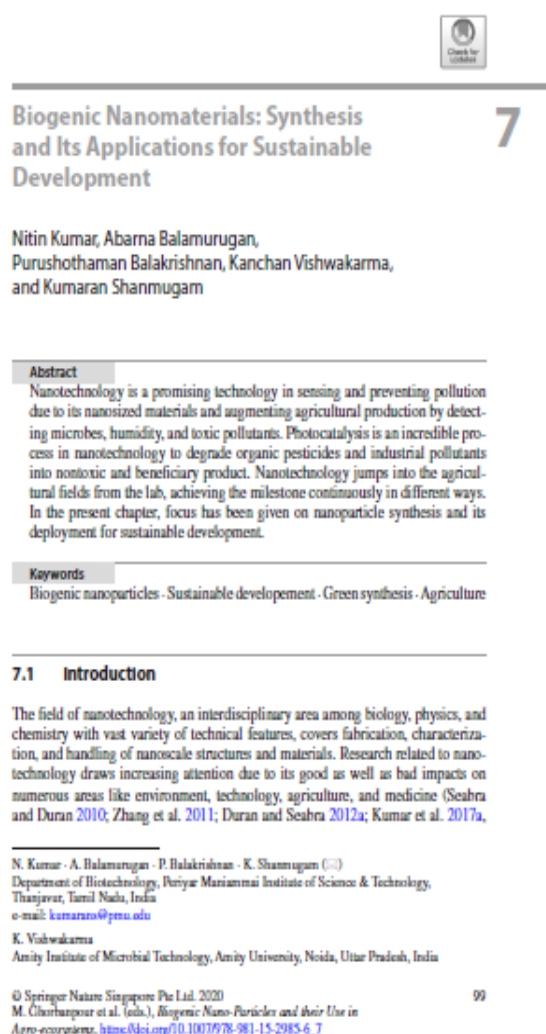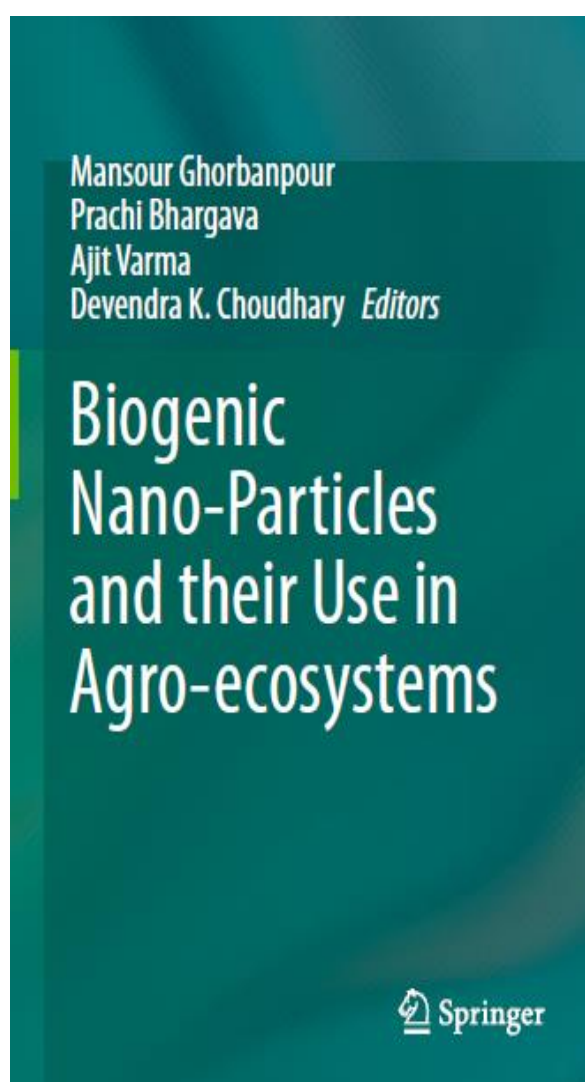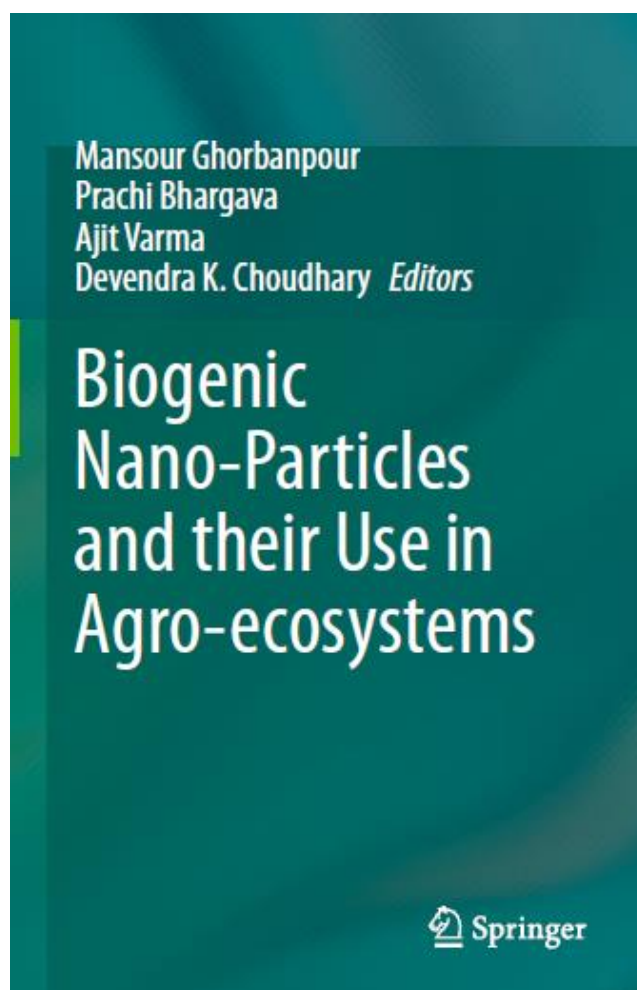
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Biogenic Nanomaterials: Synthesis
and Its Applications for Sustainable
Development

7

Nitin Kumar, Abarna Balamurugan,
Purushothaman Balakrishnan, Kanchan Vishwakarma,
and Kumaran Shanmugam

Abstract

Nanotechnology is a promising technology in sensing and preventing pollution due to its nanosized materials and augmenting agricultural production by detecting microbes, humidity, and toxic pollutants. Photocatalysis is an incredible process in nanotechnology to degrade organic pesticides and industrial pollutants into nontoxic and beneficiary product. Nanotechnology jumps into the agricultural fields from the lab, achieving the milestone continuously in different ways. In the present chapter, focus has been given on nanoparticle synthesis and its deployment for sustainable development.

Keywords

Biogenic nanoparticles · Sustainable developement · Green synthesis · Agriculture

7.1 Introduction

The field of nanotechnology, an interdisciplinary area among biology, physics, and chemistry with vast variety of technical features, covers fabrication, characterization, and handling of nanoscale structures and materials. Research related to nanotechnology draws increasing attention due to its good as well as bad impacts on numerous areas like environment, technology, agriculture, and medicine (Seabra and Duran 2010; Zhang et al. 2011; Duran and Seabra 2012a; Kumar et al. 2017a,

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99

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Nanomaterials: Emerging Trends and Future Prospects for Economical Agricultural System

16

Nitin Kumar, Abarna Balamurugan, M. Mohiraa Shafreen, Afrin Rahim, Siddharth Vats, and Kanchan Vishwakarma

Abstract

In developing countries, when it comes to national economy, one of the important building blocks is agriculture. The food production rate has risen, which has a substantial role in a country's gross domestic production. The application of pesticides and fertilizers determines the rate of food production. Agricultural growth and food production are very much dependent on parameters like soil health, water availability, climate change, etc. Since the world population is expanding at an alarming rate, the food production needs to be enhanced, and adverse agricultural conditions have to be regulated. Supporting the massive increase in population, the sustainable development of agriculture is required. With latest advancements, new avenues have been opened up by nanotechnology in the field of food processing and crop improvement. The present chapter highlights the role and emergence of nanomaterials in agriculture system.

Keywords

Nanomaterials · Sustainable agriculture · Nanofertilizers · Targeted delivery

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281

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Segment Based Clustering with Data Aggregation for Underwater Wireless Sensor Networks

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Abstract: **Climate change, Global warming and Environmental degradation have got a very close relationship and relevance to oceanographic changes. The parameters such as temperature, currents at the surface and deep-sea, salinity and marine biological disturbances of the ocean contribute a lot to the changes of its environmental behavior. This in turn leads to unpredictable contingencies and often disastrous effects on the entire society and surrounding. That purpose is met with by the adoption of efficient data aggregation algorithms for Underwater Wireless Sensor Networks (UWSNs). Many researchers had employed UWSNs system to gather data on the factors of the ever changing sea environment. Invariably they all faced one unique problem of managing the energy source in conserving and controlling the utilization of the energy. It is absolutely essential to prolong and enhance the life-span of the network. The Segment Based Cluster with Data Aggregation (SBCDA) for Underwater Wireless Sensor Networks reduce the redundancy, overhead in the Cluster Head, packet lost, consumption of energy thereby the life-span of the network is increased.**

Keywords: Data Aggregation, Oceanographic, Redundancy, Energy Consumption

I. INTRODUCTION

The entire world is quite concerned and worried about the sustainability of the future because of uncontrolled global warming, climate changes and fast depleting natural resources due to indiscriminate exploitation. To minimize such disastrous effects, extensive and exhaustive data in a comprehensive manner needs to be gathered, analyzed and appropriate countermeasures are to be contemplated. For this sensitive task, wireless sensor networks could be adopted, since, the WSNs can significantly contribute to the development of energy-monitoring systems, natural disaster detection and tracking systems and hazard response systems and many more. It is used extensively in the field of Meteorological, Geological, Habitat, Pollution, Health, Mechanical and Defence applications [1] [2]. Wireless Sensor Networks research is fast progressing in the developments of the Internet of Things, Artificial Intelligence and Machine Learning System, Neural Networks, Bio-Medical and Tracking system etc., A lot of applications are running with the help of sensor systems. However, there is a limitation to the wide adaptation because of faster energy depletion.

Unlike with an arrangement of earthbound, portable, multimedia, and underground sensors, the submerged sensor is progressively troublesome because of natural and situational conditions. In a harsh underwater environment, suddenly the sensor nodes may be lost over at the time due to fishing trawlers, underwater animals or failure of waterproofing, etc., Hence, the loss of a node will have drastic effects. The sensor nodes are carefully monitored in relevance to the consumption of energy. So, the nodes expect to configure on ideas for a very long period of sleeping mode. The transmission capacity, proliferation delay, availability, energy, information collection ratio, and packet dropping are the different components considered for the acceptance and adoption of UWSNs.

The clustering arrangement is a generally utilized methodology for overseeing information, bringing down communication overhead, empowering improved traffic control, and improving energy efficiency with system security. For UWSNs, a few clustering procedures have been introduced that have been focused to augment energy conservation. The clustering convention, for the most part, works in three phases namely: an arrangement of the clusters, determination of Cluster Head (CH), and transmission of information. It is used for collecting information from the Cluster Members (CM). Each cluster comprises nodes that are in the region of each other and gathered according to significant observations. A cluster node might be assigned as a Cluster Head (CH) or a Cluster Member (CM). The cluster head of each cluster can be considered as a limited cluster member, which is responsible for directing, collecting, and transmitting information inside the network. During the packet transmissions, if there an occurrence of non-aggregated information arises, and then the cluster head sends the data to the base station. This causes a very high increase in overheads of headers related to information packets.

The basic aim of aggregation in this work is to avoid direct linking and communication to the destination node. It is used to construct the aggregate path over the network. Data aggregation algorithms are mainly used to minimize network traffic and reduce energy demand. The Data aggregation process maximizes the conservation of energy and scalability of the network. The redundancy of the information is identified among the collected information and the consumption of energy is also minimized by employing the aggregation of data. The Segment Based Clustering with Data Aggregation (SBCDA) model eliminating the redundant packet transmission, avoid the traffic, packet loss and consumption of energy.

The research work in this paper is planned as follows: Section 2 shows the background study of the research work. Section 3 explains the process of clustering. Section 4

1

Name of the Teacher	Ruby D, Arumugam S, Jeyachidra J
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EFFECTS AND CHALLENGES IN ADOPTING OF TECHNOLOGICAL ADVANCEMENTS IN BUSINESS DURING THE COVID-19 PANDEMIC

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Abstract

Many people in the entire world are affected by the Corona Virus. The Covid-19 outbreak and changed the entire scenario of the world from 2019 onwards. This situation is unpredictable and its affect the economy of most of the small scale, medium scale and large scale companies, education system. Even though, there is a huge drop in sales and revenue, a lot of e-commerce companies have been started to sell their product to the customers in several ways. The new plan needs to be put on hold until the situation becomes improved. Most of the researchers are applying different strategies for the improvement of the financial performance of the organizations. New strategies also have been framed when the business environment has high level of uncertainty during the pandemic. They are Identifying Key Drivers for change to attempt to predict the unpredictable. The digital transformation, technological adaptation of an organization to increase the turnover of the organization and to give financial protection to the people. The shift to new innovative technologies garners innovative solutions and it helps in customers' interactions, excess stocks and to improve the sales of the product in turn it increases the revenue of the organization.

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Dr. D. Umamaheswari Dr. R. Prakash Mrs. T. Valli   1

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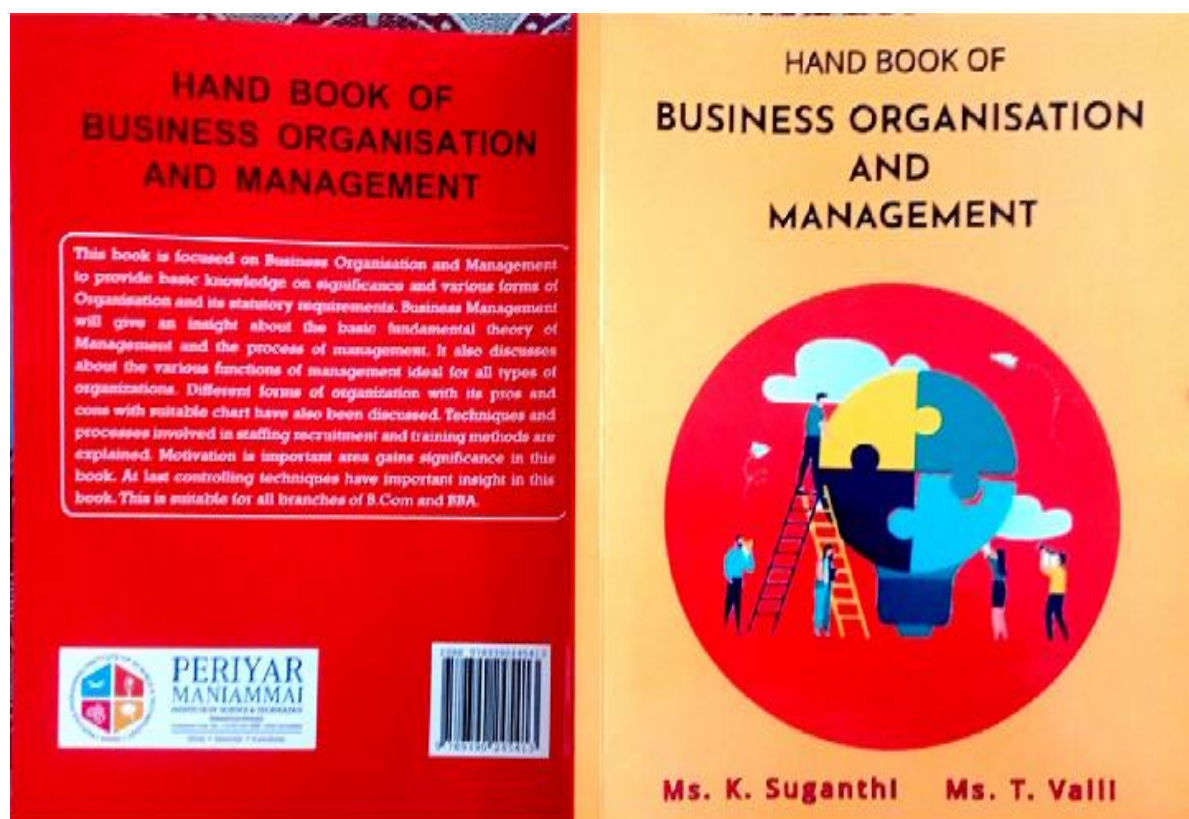
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Current Approaches in Science and Technology Research Vol. 11

Bamboo Reinforced Panels for Fence Walls

S. Suppiah

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Abstract

The construction industry consumes large quantity of steel and emits carbon leading to global warming, which is a dampener for sustainable growth all over the world. As an alternative to steel, bamboo has been tried as reinforcement in different countries (e. g., Indonesia, China, Malaysia, India) on a limited

BAMBOO REINFORCED PANELS FOR FENCE WALLS

By

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ABSTRACT

The construction industry consumes large quantity of steel and emits carbon leading to global warming, which is a dampener for sustainable growth all over the world. As an alternative to steel, bamboo has been tried as reinforcement in different countries (e. g., Indonesia, China, Malaysia, India) on a limited scale only. Presently, fence walls erected with precast steel reinforced concrete (SRC) panels are widely in demand due to saving in time and simple craftsmanship when compared to conventional fence walls erected with materials such as stone, brick or barbed wire. Preparation of SRC panels has become a cottage industry due to a higher demand. However, these panels are prepared without adhering to any specification or standards. This work aims at exploring the methods of adopting bamboo as an alternative to steel for erecting fence walls. As many as thirty (30) bamboo reinforced concrete (BRC) slabs of dimension 1000 mm x 300 mm x 50 mm (length: height: thickness) were cast in the laboratory adopting M20 mix. Fifteen (15) slabs each were cast with (i) bambusa balcooa and (ii) bambusa polymorpha species as reinforcement with a pretreatment using coal tar creosote. The slabs were tested using (a) ultrasonic instrument to assess the quality of concrete used and (b) universal testing machine to establish the load versus deflection characteristics. As a comparative study these tests were repeated on precast, SRC panels, procured from a locally manufacturing unit. The test results reveal that the quality of concrete in BRC slabs was better than that of the SRC slabs. The BRC slabs with either type of species failed at approximately 50% of the magnitude of load taken by SRC slabs at failure. The deflection and the associated crack width also followed the same trend. The cost analysis performed indicates that BRC slabs are cheaper by 30 to 35% in comparison to SRC panels. Therefore, it is recommended to adopt BRC slabs for erecting fence walls and barns leading to benefits such as, sustainable growth of the environment, wider cultivation of bamboo species and more rural employment.

Keywords: Bamboo, fence wall, concrete, steel, ultrasonic test, cost analysis, sustainable growth.

1.0 INTRODUCTION

Bamboo is a type of long grass plant abundantly found in Southeast Asia. It is known as the "poor man's building material" due to its widespread cultivation and use in tropical climates where dwellings are constructed using bamboo (INBAR, 1994). Few of the applications of bamboo in the construction industry are: scaffolding, trusses, bridges, low-cost dwellings in earthquake prone hilly regions. Recently bamboo has been tried as an environmentally sustainable building material all over the world, since manufacturing of one tonne of steel generates two tonnes of carbon dioxide (Suppiah and Venugopal 2015). The construction industry is the single most contributor in producing carbon dioxide (CO_2) due to the involvement of fossil fuels (steel and cement). It has been observed that producing steel requires 50 times more energy than that required for bamboo. The significant feature of bamboo is its high tensile strength of the order of 200-300 MPa, which becomes an alternative to steel. Furthermore, the ratio of tensile strength to its specific weight is nearly six times that of steel, making bamboo as an attracting alternative to steel (Devi and Nuralinah, 2017). One particular species of bamboo is known to grow more than 1.25 metres in 24 hours. Bamboo grows best in well-drained, light sandy soil. The tropical bamboo requires that full sun must reach the leaves. Major advantages of bamboo are (Iyer, 2002; Suppiah and Venugopal, 2015; Devi and Nuralinah, 2017):

(a) Possesses high tensile strength when compared to steel, which makes it as an alternative to steel as reinforcement.
(b) It is an extremely lightweight material and the progress can be achieved without the necessity of skilled craftsmen and heavy machinery (e.g. crane).
(c) A versatile shock absorbing material making its application attractive in the construction of lightweight dwellings in seismically active hilly regions.

1 | P a g e

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