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Food and Nutritional Security

An Indian Perspective

Volume - 1

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Research Trends in Food Technology and Nutrition

Volume - 13

Chief Editor

Dr. Rashmi Shukla

Senior Scientist & Head, KVK, JNKVV, Jabalpur, Madhya Pradesh, India

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EMERGING TRENDS IN SOCIAL SCIENCE AND HUMANITIES RESEARCH

(Volume -1)

Edited By

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(Volume -1)

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Jyoti Prakash Tamang *Editor*

Ethnic Fermented Foods and Beverages of India: Science History and Culture

SpringerLink

Ethnic Fermented Foods and Beverages of India: Science History and Culture pp 121-138 | Cite as

Ethnic Fermented Beverages and Foods of Chhattisgarh

Authors Authors and affiliations

Shubhra Tiwari, S. K. Jadhav, Esmil Beliya, Jai Shankar Paul, G. D. Sharma

Chapter

First Online: 03 March 2020

Abstract

Chhattisgarh is known as "rice bowl of India" due to enormous production of rice. Rice is the major ingredient of the ethnic fermented food and beverages of Chhattisgarh. Apart from rice, traditional dishes are also made from wheat, barley, and different lentils. Fermentation process has an impact on food's aroma, flavor, texture, and nutritional content besides preservation. The ethnic food of Chhattisgarh serves a wide range of mouthwatering dishes that are enriched with flavor and exceptional taste. With nutritional values, different fermented foods are lays an important ethic place in tribal people's life. Beverages play an important role in the life of tribal

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Fungal Biology

Abd El-Latif Hesham
Ram Sanmukh Upadhyay
Gauri Dutt Sharma
Chakravarthula Manoharachary
Vijai Kumar Gupta *Editors*

Fungal Biotechnology and Bioengineering

Springer

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Chapter 8
Fungal Bioengineering in Biodiesel Production

Shubhra Tiwari, S. K. Jadhav, Gauri Dutt Sharma, and Esmil Beliya

8.1 Biodiesel and Its Advantage

The exploitation of fossil fuel and their impact on the environment have led to seek an alternate and sustainable source of energy. Biofuels may emerge as a new source of renewable energy. Biodiesel is an alternative fuel made from biological sources. It is an attractive energy source due to its environmental benefits. Biodiesel is produced by the process of transesterification. It can be extracted from algae, bacteria, and fungi. Fungi have great capacity to accumulate the lipids intracellularly. Due to its environmental benefits and renewable resources, biodiesel has become more lucrative in recent years. Microbial oils may serve as a potential feedstock for the production of biodiesel which need further research. Biodiesel, a liquid fuel, can be obtained from biological materials such as vegetable oil and animal fats. These contain free fatty acids, phospholipids, sterols, water and other impurities. Many vegetable oils have been explored for the production of biodiesel such as palm oil, soybean oil, sunflower oil, coconut oil, and rapeseed oil (Shay 1993). The advantage of biodiesel over fossil fuel is of its low toxicity, renewability, and rapid degradation more in comparison with diesel fuel. To use biodiesel, there is no need for engine modifications (Romano and Sorichetti 2011). Biodiesel fuel has drawn attention globally as a blending part of fuel diesel in vehicles (Demirbas 2009).

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Mirza Hasanuzzaman *Editor*

Plant Ecophysiology and Adaptation under Climate Change: Mechanisms and Perspectives II

Mechanisms of Adaptation and Stress Amelioration

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Plant Ecophysiology and Adaptation under Climate Change: Mechanisms and Perspectives II pp 107-135 | Cite as

Mechanisms of Plant Adaptation and Tolerance to Metal/Metalloid Toxicity

Authors Authors and affiliations

Vibhuti Chandrakar, Bhumika Yadu, Roseline Xalxo, Meetul Kumar, S. Keshavkant

Chapter

First Online: 05 September 2020

Abstract

Metal/metalloid (HM) toxicity/stress has become a worldwide menace due to the rising accretions in water, soil, and air which lead to detrimental effects in plants. The general consequences of HM toxicity include oxidative injury which causes polypeptide oxidation, lipid peroxidation, enzyme inactivation, DNA mutilation, and/or alteration of other key components of plant cells. To limit the hazardous effects of HMs and their accumulation, plants have evolved detoxification instruments to preserve physiological accumulations of essential metal

Mirza Hasanuzzaman *Editor*

Plant Ecophysiology and Adaptation under Climate Change: Mechanisms and Perspectives I

General Consequences and Plant Responses

12

Plant Ecophysiology and Adaptation under Climate Change: Mechanisms and Perspectives I pp 393-428 | Cite as

Ecophysiological Responses of Plants Under Metal/Metalloid Toxicity

Authors Authors and affiliations

Roseline Xalxo, Vibhuti Chandrakar, Meetul Kumar, S. Keshavkant

Chapter

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Abstract

Heavy metal/metalloid (HM) contamination issues are becoming progressively more widespread worldwide, which are witnessed in various locations like foundries, mining industries, smelters, vehicular emissions, coal burning power plants, and agricultural sectors. Heavy metal/metalloid occurs naturally in the Earth's crust, but man-made sources and various industrial activities have led to severe environmental contamination globally. In the present

HEAT STRESS TOLERANCE IN PLANTS

PHYSIOLOGICAL, MOLECULAR AND GENETIC PERSPECTIVES

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Chapter 5

Alteration in Carbohydrate Metabolism Modulates Thermotolerance of Plant under Heat Stress

Roseline Xalxo, Bhumika Yadu, Jipsi Chandra, Vibhuti Chandrakar, S. Keshavkant,

Book Editor(s):Shabir Hussain Wani, Vinay Kumar,

First published: 03 February 2020 | https://doi.org/10.1002/9781119432401.ch5

Summary

Recently, owing to climate change/global warming, plants are constantly stumbling upon inauspicious growth conditions. Maintenance of transitory or constantly high temperature in the surrounding environment results in alterations in plants at the physiological, biochemical, and molecular levels, which in turn influences growth, development, and yield responses. Such adverse impacts of heat stress can effectively be mitigated by developing plants with improved thermotolerance using various genetic approaches. To this end, a thorough understanding of physiological responses of plants to heat stress, precise mechanisms involved in heat-stress tolerance, and possible tactics

18.

Qiang-Sheng Wu *Editor*

Arbuscular Mycorrhizas and Stress Tolerance of Plants

Springer

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Chapter

An Overview of Genus *Zanthoxylum* with Special Reference to Its Herbal Significance and Application

Gyanmani Ekka, Shailesh Kumar Jadhav and Afaque Quraishi

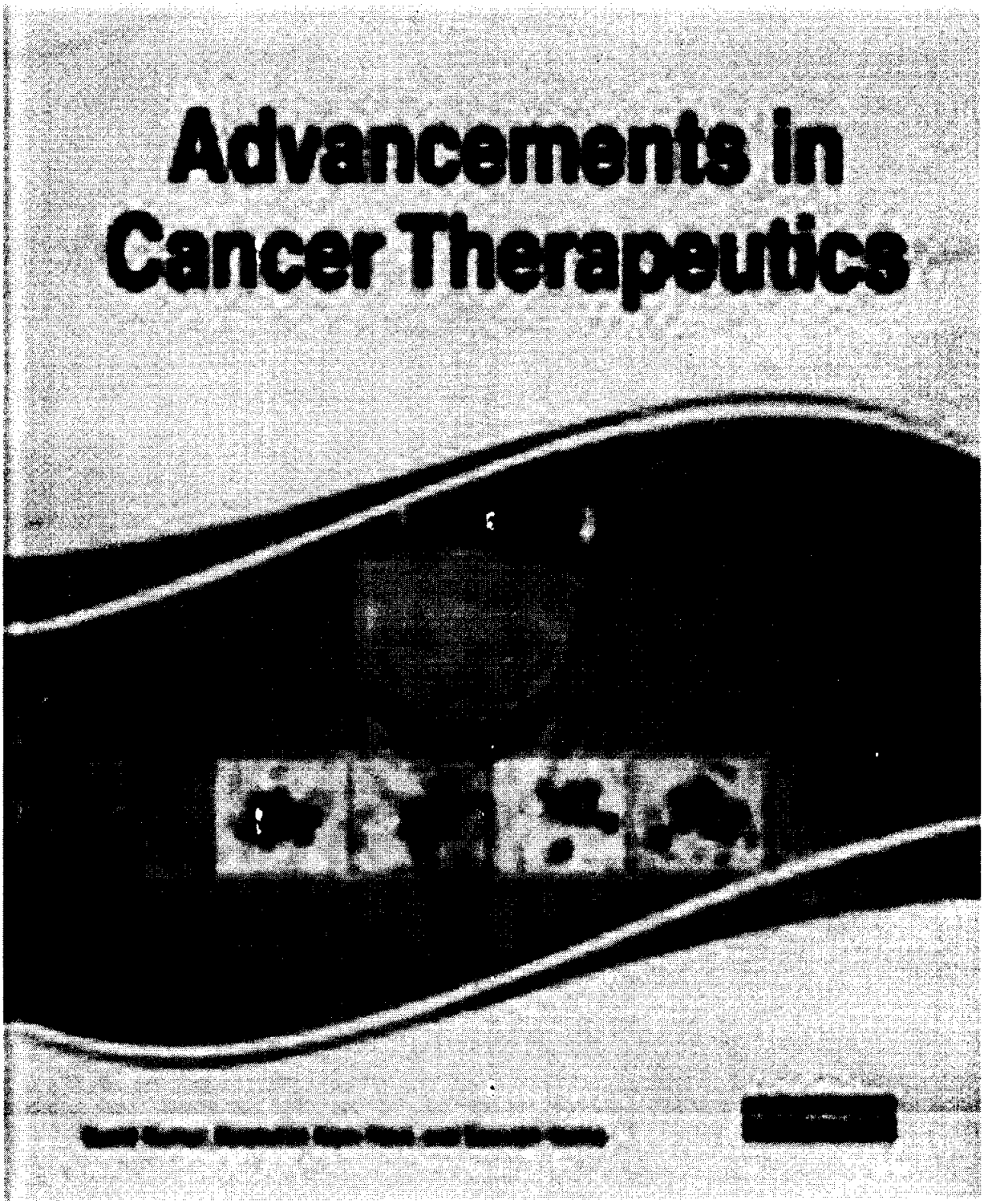
Abstract

The plants of genus *Zanthoxylum* are effectually utilized in conventional and present-day medicine system to fight many diseases and disorders like pain, seizures, inflammation, cancer, liver and heart malady. Many of its plants—trees and shrubs, are citrus in nature, with curative antimicrobial, antihelminthic, antipyretic, and antiviral activities. More than 100 of its plant species have been identified and recorded for their potential as an herb in modern pharmacopeia. The species of this genus also have potent ethno-pharmacological significance. Many medicinal secondary metabolites like terpenoids, flavonoids, and alkaloids have also been profiled in many *Zanthoxylum* species. Additionally, fruit of many of the species is also significantly utilized as a major spice under the name "Sichuan pepper" in many countries like China and India. Thus, this unique blend of herb and spice characteristic of the genus needs a detailed description. This chapter highlights the major significant discoveries in the recent decade in this genus, which can add a step in the way of development of herbal medicines. Documentation of such medicinal plants may aid in derivation of plant-based medicines, which is the demand of the hour.

Keywords: cancer, herb, herbal, Sichuan pepper, *Zanthoxylum*

Handbook of Research on

Advancements in Cancer Therapeutics



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Study on the Impact of Sustainable Agriculture Practices on Food Security

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Abstract:

The Indian economy is the fastest growing economy in the globe. The economic revolution is significantly depending on the performance of agriculture and other allied sectors. The agriculture practices are the most important custom tradition developed by human beings for survival on the earth at ancient. The most population proportion of India belongs to rural areas. Thus, majority of the population depend on indirectly or directly in agriculture practices for employment opportunities. According to the food and agriculture organization (FAO) report for India, as 70% of rural population depend on primary employment as agriculture, among to them only 82% of farmers have small and marginal level. The population will continually increasing in last decade. Therefore some emerging challenges has appears such as huger rate, malnutrition, contaminated food products, along with reduced agriculture land, loss of agriculture productivity, less fertile, climate changes, pest be resistance, due to heavy used in chemical or pesticides in era of green revolution. The objective of this chapter, to deal with inclusive economic development through sustainable practices in agriculture, development of bio economy, implementing of advance and biological practices in cropping fields, furthermore, to prepares the future policy to incorporating in developed country schemes for betterment for economic and social empowering

Shaikh, AA & Mateen, A (eds.), Financial Inclusion and Economic Growth

2.3

Chapter 18
Recent Research and Development in Stem Cell Therapy for Cancer Treatment: Promising Future and Challenges

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Shekhar Verma
University College of Pharmacy, Pandit Deendayal Upadhyay Memorial Health Science and Ayush University of Chattisgarh, India

ABSTRACT

Cancer is the most prevalent and dangerous disease, and it leads to millions of deaths worldwide. Generally, metastatic cancer cells are not eradication by conventional surgical operative or chemotherapy-based treatment. New pathways have been established in various arenas such as unique biology, modulators regulatory mechanism, directional migration, self-renewal, etc. The individual pathways can be employed as therapeutic carriers, specific drug targeting, generation of acquiring nature immune cells, and re-generative medicine. The present scenario, stem cell therapy, focused on a promising tool for targeted cancer treatment. Stem cells also utilized as viruses and nanoparticles carry to enhance the primary therapeutic application in various dimensions such as cancer target therapy, regenerative medicine, immune-modulating therapy, and anticancer drugs screening. Furthermore, the rapid development in next-generation sequencing techniques and cancer genomics and proteomics analysis approaches are making therapeutics targeting organ-specific cancer more precise and efficient.

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Chapter 14
Surfactant-Based Anhydrous Nano Carrier System for Poorly Aqueous Soluble Anti-Cancer Drugs

Shekhar Verma
University College of Pharmacy, Pandit Deendayal Upadhyay Memorial Health Science and Ayush University of Chattisgarh, India

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Vishal Jain
University Institute of Pharmacy, Pt. Ravishankar Shukla University, Raipur, India

ABSTRACT

Around 40% of new chemical entities and drugs are lipophilic or poor aqueous soluble in nature. Among them many anti-cancer drugs are also consist lipophilic properties. Available poorly water soluble anti-cancer drugs are paclitaxel, etoposide, and docetaxel. To get better stability of those anti-cancer drug via encapsulation and searching suitable carrier system for the controlled release, design and development requires of anhydrous nano carrier system. However, to deliver and entrapment of these kind of anti-cancer drugs are very essential with avoidance of water free preparation to get suitable controlled release application and achieve targeting site. The primary objective of proposed chapter is to develop and design novel stable anhydrous or non-aqueous nano emulsion carrier system and provide suitable carrier system for poorly aqueous soluble anti-cancer drugs. Another important aim is to design and develop better stabilizing agent by combining different type of surfactant, co-surfactant, and co-solvent.

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CHAPTER

9 Hybrid nanomaterials as chemical sensors

Khemchand Dewangan[a,*], Kamlesh Shrivas[b], Ramsingh Kurrey[b]
[a]*Department of Chemistry, Indira Gandhi National Tribal University, Amarkantak, Madhya Pradesh, India* [b]*School of Studies in Chemistry, Pt. Ravishankar Shukla University, Raipur, Chhattisgarh, India*

9.1 Introduction

Structurally, all solids may be classified into two categories: crystalline materials with long-range order and glasses with short-range order (Zhu et al., 1987). Most properties of solids mainly depend on the nearest neighbor configuration, for example, ferromagnets have interatomic potentials and three-dimensional (3D) exchange energy (Sun et al., 2000). Nanocrystalline materials with a crystallite size in the range of a few nanometer (1–100 nm) are a new class of solid materials. They are different from glasses and crystals, especially as glasses show short-range and crystals exhibit long-range atomic/molecular lattice ordering. Nanomaterials are single crystalline or polycrystalline materials with a structure that has two components, as shown in Fig. 9.1. A crystalline area of the nanomaterial is composed of atoms that are situated in the crystal lattice and known as grains. The interfacial area is composed of atoms, which are present in the grain boundaries between adjacent crystallites. Therefore, the main difference between the structure of nanocrystalline solids and conventional solids lies in the concentration of defects (Gleiter, 1989).

These defects are mainly present in the nanocrystalline materials by incorporating vacancies, dislocations, and grain or interphase boundaries. They consist of a high fraction of defects, about 50% with crystallites, whereas the conventional materials have a fraction of defects in the order of 4%–10% (Gleiter, 1989). The large fraction of defects reduce the atomic density, giving rise to a different local atomic arrangement and a broad distribution of interatomic spacing. The local atomic arrangement depends on the relative orientation of the adjacent crystallites and boundary inclination. If the crystallites are oriented randomly, all the grain boundaries have different atomic structures. Hence, the interfacial regions represent a solid-state structure without long-range or short-range order. Thus, the overall structure of these materials deviates

*Corresponding author

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CHAPTER

Degradation, removal, and detection of pesticides using nanocomposites 10

Tarun Kumar Patle[a], Ramsingh Kurrey[a], Khemchand Dewangan[b], Kamlesh Shrivas[a,*]
[a]*School of Studies in Chemistry, Pt. Ravishankar Shukla University, Raipur, Chhattisgarh, India*
[b]*Department of Chemistry, Indira Gandhi National Tribal University, Amarkantak, Madhya Pradesh, India*

10.1 Introduction

A pesticide is a chemical substance used for controlling the growth of pests to prevent diseases found in plants and animals. Pesticides can be classified mainly as insecticides, herbicides, and fungicides according to their function and chemical compositions such as organophosphates, carbamates, organochlorine, nitrophenol, pyrethroids, and other derivatives. The US Environmental Protection Agency (EPA) has set acceptable limits on different types of pesticides for their contamination levels in drinking and surface water (Richardson and Ternes, 2011). The toxicity of pesticides depends upon their solubility in solid and liquid sources. The compounds that come from pesticide degradation can remain in flora and fauna for a long time, depending on their half-lives. Pesticides can grow to be more concentrated as they move up the ecosystem and food chain in the environment. Pesticides are broadly used in agricultural production all over the world to protect crops against threats from pests, fungi, and weeds. Therefore, pesticide residues are broadly dispersed in soils, groundwater, and drinking water (Aragay et al., 2012). There are a variety of routes for pesticide contamination in the environment such as industrial effluents and excess from agricultural land use and spraying. Pesticide residues have major environmental impacts on ecosystems and mammals (Joo and Cheng, 2006). Thus, the degradation and removal of pesticides from the environment and then an analysis with modern instrumental techniques are important concerns to prevent the entry of this toxic chemical into the ecosystem.

Nanotechnology has created a lot of interest in recent times because of its small size, low cost, and high efficiency. In this context, nanocomposite (NCs) materials have been synthesized for pesticide degradation and removal and as sensing probes for the analysis of pesticides from environmental samples (Kumar et al., 2017; Rani

*Corresponding author

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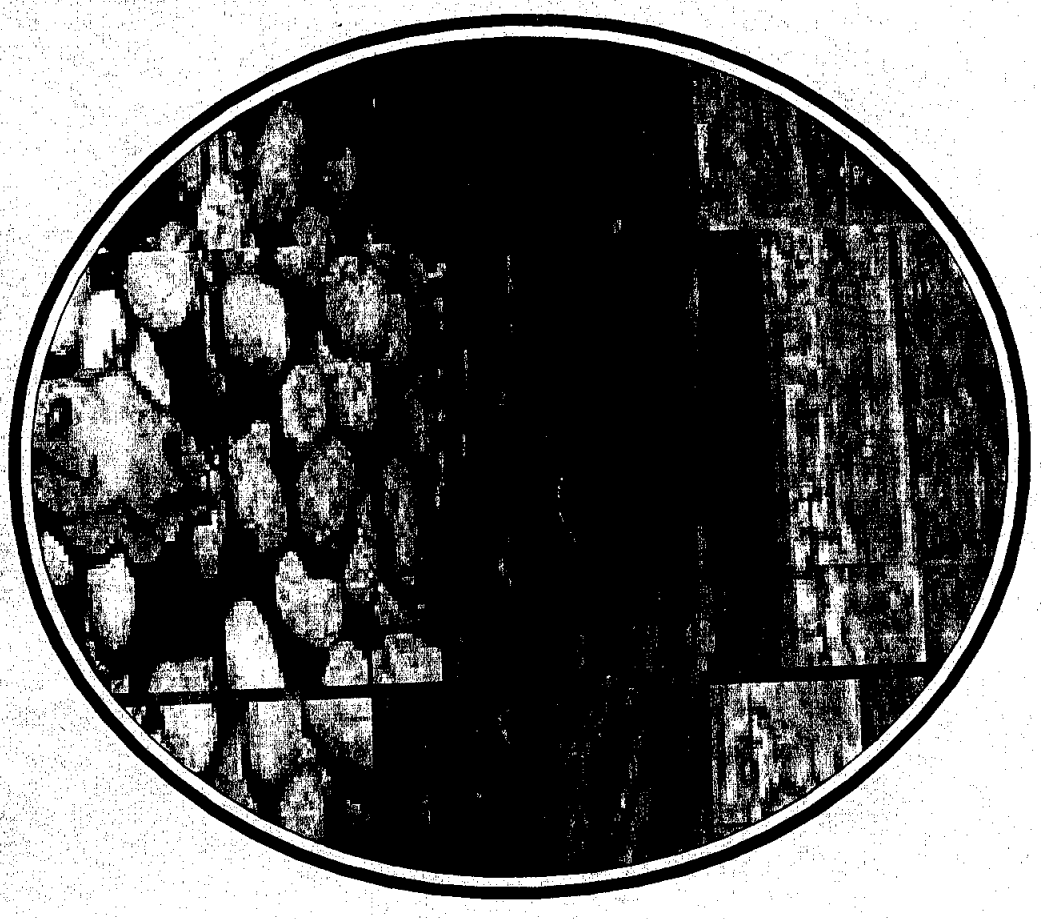

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Chapter
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Abstract

Photovoltaics are now slowly replacing fossil fuels, aiming at higher efficiencies and lower costs to bring PV to cost parity with grid electricity. Solar energy is a clean and renewable energy, which is generated from the natural source sun. Solar cells are devices that convert solar energy into electricity, either directly via the photovoltaic effect, or indirectly by first converting the solar energy to heat or chemical energy. Both inorganic and organic types of solar cells are available. Unfortunately, the solar cells dominating the market are all made of inorganic materials requiring expensive and complicated manufacturing processes and have limited

Advances in Modern Sensors

Physics, design, simulation and applications

CHAPTER 2

Classification and characteristics of sensors

P Vyas and K Thakur

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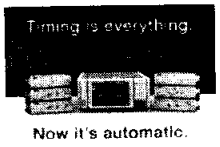

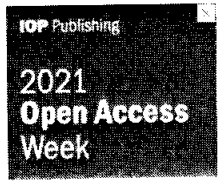

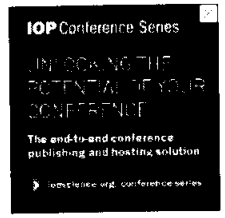

Abstract

This chapter deals with various aspects of sensors including classification, different types, transfer function, characteristics and specification, and ends with a comparison between them.

Advances in Biomedical Engineering and Technology pp 413-424 | Cite as

Comparative Investigation of Different Classification Techniques for Epilepsy Detection Using EEG Signals

Authors | Authors and affiliations

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Conference paper
First Online: 29 September 2020

Part of the Lecture Notes in Bioengineering book series (LNBE)

Abstract

Among the major brain abnormalities that have been identified, various remedial strategies are proposed to tackle most of such conditions. One of the serious abnormalities of the nervous system is epilepsy, which causes electrical distraction and strains the neural system. Usually,

(9)

Env. Sci - 3.4.6

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COVID-19 General Introduction and Positive Impact on Industry and Society

Authors

Shobhana Ramteke and Bharat Lal Sahu

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