

3.4.4 Details of books and chapters in edited volumes / books per teacher during the year

S.N.	Title of the Book	Title of the Chapter published	Page No./ Link to Document
1	Wastewater Treatment Reactors: Microbial Community Structure	Metagenomics: A powerful lens viewing the microbial world	4-13
2	An Innovative Role of Biofiltration in Wastewater Treatment Plants (WWTPs)	Biofiltration techniques in the remediation of hazardous inorganic and organic contaminants	14-23
3	New Trends in Removal of Heavy Metals from Industrial Wastewater	Prospects of algae and bacteria in the remediation of hazardous metals from wastewater	24-27
4	New Trends in Removal of Heavy Metals from Industrial Wastewater	Prospects of algae and bacteria in the remediation of hazardous metals from wastewater	28-31
5	Wastewater Treatment Reactors: Microbial Community Structure	Microbial community diversity in a wastewater treatment plant	32-36
6	Non-Timber Forest Products: Food, Healthcare and Industrial Applications	Forest-based medicinal plants for cardiovascular diseases	36-45
7	Non-Timber Forest Products: Food, Healthcare and Industrial Applications	Forest-based medicinal plants for cardiovascular diseases	46-54
8	Non-Timber Forest Products: Food, Healthcare and Industrial Applications	Forest-based medicinal plants for cardiovascular diseases	55-63
9	Non-Timber Forest Products: Food, Healthcare and Industrial Applications	Forest-based medicinal plants for cardiovascular diseases	64-72
10	Non-Timber Forest Products: Food, Healthcare and Industrial Applications	Plant-Based Sweeteners and Their Applications in Modern Lifestyle	73-81
11	Non-Timber Forest Products: Food, Healthcare and Industrial Applications	Plant-Based Sweeteners and Their Applications in Modern Lifestyle	82-90

12	Non-Timber Forest Products: Food, Healthcare and Industrial Applications	Plant-Based Sweeteners and Their Applications in Modern Lifestyle	91-99
13	Non-Timber Forest Products: Food, Healthcare and Industrial Applications	Plant-Based Sweeteners and Their Applications in Modern Lifestyle	100-108
14	Sustainable Food Waste Management: Concepts and Innovations	Plant-Based Sweeteners and Their Applications in Modern Lifestyle	109-115
15	Microbiomes and the Global Climate Change	Microbes and Climate: A Tangled Relation	116-124
16	Microbiomes and the Global Climate Change	Microbes and Climate: A Tangled Relation	125-133
17	An Innovative Approach of Advanced Oxidation Processes in Wastewater Treatment	Role of fungal and plant systems in wastewater treatment: Mechanisms and applications	134-138
18	An Innovative Approach of Advanced Oxidation Processes in Wastewater Treatment	Role of fungal and plant systems in wastewater treatment: Mechanisms and applications	139-143
19	An Innovative Approach of Advanced Oxidation Processes in Wastewater Treatment	Role of fungal and plant systems in wastewater treatment: Mechanisms and applications	144-148
20	Development in Wastewater Treatment Research and Processes: Removal of Emerging Contaminants from Wastewater through Bio-nanotechnology	Advances in nanotechnologies of waste water treatment: Strategies and emerging opportunities	149-153
21	Big Data Analysis for Green Computing: Concepts and Applications	Mental Disorder Detection Using Machine Learning	154-157
22	Wastewater Treatment Reactors: Microbial Community Structure	Removal of pollutants from wastewater via biological methods and shifts in microbial community profile during treatment process	158-162
23	Wastewater Treatment Reactors: Microbial Community Structure	Removal of pollutants from wastewater via biological methods and shifts in microbial community profile during treatment process	163-167
24	Wastewater Treatment Reactors: Microbial Community Structure	Removal of pollutants from wastewater via biological methods and shifts in microbial community profile during treatment process	168-172

25	Handbook of Nanomaterials for Sensing Applications	Nanofabrication techniques for semiconductor chemical sensors	173-177
26	Nanotechnology in the Life Sciences	The Role of Zinc Oxide Nanoparticles in Plants: A Critical Appraisal	178-182
27	Security and Privacy Issues in IoT Devices and Sensor Networks	Computational intelligent techniques for prediction of environmental attenuation of millimeter waves	183-188
28	Security and Privacy Issues in IoT Devices and Sensor Networks	Computational intelligent techniques for prediction of environmental attenuation of millimeter waves	189-194
29	Security and Privacy Issues in IoT Devices and Sensor Networks	Computational intelligent techniques for prediction of environmental attenuation of millimeter waves	195-200
30	Fungi Bio-prospects in Sustainable Agriculture, Environment and Nano-technology: Volume 1: Fungal Diversity of Sustainable Agriculture	Prospect of biofuel production by fungus	201-203
31	Frontiers of Textile Materials: Polymers, Nanomaterials, Enzymes, and Advanced Modification Techniques	Introduction to textiles and finishing materials	204-207
32	Removal of Emerging Contaminants through Microbial Processes	Mechanistic Insight to Bioremediation of Hazardous Metals and Pesticides from Water Bodies by Microbes	208-215
33	Lecture Notes in Civil Engineering	Analysis, Design, and Comparison of Different Building-Integrated Photovoltaic Thermal (BIPVT) System for Indian Meteorological Condition	216-217
34	Lecture Notes in Civil Engineering	Analysis, Design, and Comparison of Different Building-Integrated Photovoltaic Thermal (BIPVT) System for Indian Meteorological Condition	218-219
35	Handbook of Nanomaterials for Manufacturing Applications	Engineered nanomaterials: Scope in today's textile industry	220-223
36	Intelligent Systems Reference Library	An Emerging Approach to Intelligent Techniques—Soft Computing and Its Applications	224-226



Wastewater Treatment Reactors

Microbial Community Structure

Book • 2021



Edited by:

Maulin P. Shah and Susana Rodriguez-Couto

About the book

Browse this book



By table of contents



Purchase book



Share this book

Book description

Wastewater Treatment Reactors: Microbial Community Structure analyzes microbial community structure in relation to changes in physico-chemical parameters, the gene content (metagen ... [read full description](#)

About the book

Description

Wastewater Treatment Reactors: Microbial Community Structure analyzes microbial community structure in relation to changes in physico-chemical parameters, the gene content (metagenome) or gene expression (metatranscriptome) of microbial communities in relation to changes in physico-chemical parameters, physiological aspects of microbial communities, enrichment cultures or pure cultures of key species in relation to changes in physico-chemical parameters, and modeling of potential consequences of changes in microbial community structure or function for higher trophic levels in a given habitat.

As several studies have been carried out to understand bulking phenomena and the importance of environmental factors on sludge settling characteristics, which are thought to be strongly influenced by flocculation, sludge bulking, foaming and rising, this book is an ideal resource on the topics covered.

Key Features

- Presents the state-of-the-art techniques and applications of omics tools in wastewater treatment reactors (WWTRs)
- Describes both theoretical and practical knowledge surrounding the fundamental roles of microorganisms in WWTRs
- Points out the reuse of treated wastewater through emerging technologies
- Covers the economics of wastewater treatment and the development of suitable alternatives in terms of performance and cost effectiveness
- Discusses cutting-edge molecular biological tools
- Gives in-depth knowledge to study microbial community structure and function in wastewater treatment reactors

Details

ISBN

978-0-12-823991-9

Language

English

Published

2021

Copyright

Copyright © 2021 Elsevier B.V. All rights reserved.

Imprint

Elsevier

DOI

<https://doi.org/10.1016/C2020-0-00374-9>

Editors

Maulin P. Shah

Environmental Microbiology Lab, Bharuch, India

Susana Rodriguez-Couto

Department of Separation Science, LUT School of Engineering Science, LUT University, Finland

Table of contents

Actions for selected chapters

[Select all](#) / [Deselect all](#)



Export citations



● Full text access

Title page, Copyright, Contents, List of contributors, Preface



Book chapter  Abstract only

1 - Strategic approach for enhanced biological phosphate removal process

Anne Bhambri and Santosh Kumar Karn

Pages 1-18



Purchase

[View chapter](#) >

[View abstract](#) ✓



Book chapter  Abstract only

2 - Removal of pollutants from wastewater via biological methods and shifts in microbial community profile during treatment process

Vivek Dalvi, Farah Naaz, ... Deepak Gola

Pages 19-38



Purchase

[View chapter](#) >

[View abstract](#) ✓

3 - Nitrogen removal bacterial communities characteristics and dynamics at lab-scale reactors

A. Ziemińska-Buczyńska and J. Surmacz-Górska

Pages 39-63



Purchase

View chapter >

View abstract ✓



Book chapter ○ Abstract only

4 - Role of the microbial community in the anaerobic digester for biomethane production

Jahanvee Mitra, Rishi Pramodbabu, ... Sourmya Pandit

Pages 65-89



Purchase

View chapter >

View abstract ✓



Book chapter ○ Abstract only

5 - Microbial diversity, interactions and biodegradation of hazardous textile wastewater using biological consortium technology

Ravishankar Patil, Harshal Deshmukh, ... Jyoti Jadhav

Pages 91-117



Purchase

View chapter >

View abstract ✓



Book chapter ○ Abstract only

6 - An overview of theoretical and experimental approach to study environmental microflora

Komal Agrawal and Pradeep Verma

Pages 119-139



Purchase

View chapter >

View abstract ✓

☐ Book chapter ☐ Abstract only

7 - Microbial communities within biological wastewater treatment reactors

Rushita Lal, Anupama Srivastava and Sourish Bhattacharya

Pages 141-158

 Purchase [View chapter >](#) [View abstract ✓](#)

☐ Book chapter ☐ Abstract only

8 - Metagenomics: A field revealing the secrets of the microbial world of wastewater treatment plants

Pratikkumar Gaglani, Anupama Srivastava and Sourish Bhattacharya

Pages 159-184

 Purchase [View chapter >](#) [View abstract ✓](#)

☐ Book chapter ☐ Abstract only

9 - Metagenomics: a powerful lens viewing the microbial world

Lakhan Kumar, Rohit Satyam and Navneeta Bharadvaja

Pages 185-218

 Purchase [View chapter >](#) [View abstract ✓](#)

☐ Book chapter ☐ Abstract only

10 - Environmental parameters affecting the anaerobic microbial community

Vanessa Elisa Pinheiro and Maria de Lourdes Teixeira de Moraes Polizeli

Pages 219-252

 Purchase [View chapter >](#) [View abstract ✓](#)

☐ Book chapter ☐ Abstract only

11 - Molecular techniques used to identify perfluorooctanoic acid degrading microbes and their application in a wastewater treatment reactor/plant

Roop Kishor, Ram Naresh Bharagava, ... Diane Purchase

Pages 253-271

 Purchase [View chapter >](#) [View abstract ✓](#)

☐ Book chapter ☐ Abstract only

12 - Enhanced biological phosphate removal process for wastewater treatment: a sustainable approach

Monali Muduli, Vasavdutta Sonpal, ... Sanak Ray

Pages 273-287

 Purchase [View chapter >](#) [View abstract ✓](#)

☐ Book chapter ☐ Abstract only

13 - Modeling microbial communities: consensus among experimentalist and theorist

Darshita Ketan Pandya, Chandarana Helly, ... Madhava Anil Kumar

Pages 289-308

 Purchase [View chapter >](#) [View abstract ✓](#)

☐ Book chapter ☐ Abstract only

14 - Metagenomics: A powerful lens viewing the microbial world

Neha Tiwari, Megha Bansal and Jai Gopal Sharma

Pages 309-339

 Purchase [View chapter >](#) [View abstract ✓](#)

15 - Microbial diversity, interactions, and biodegradation/biotransformation of organic and inorganic contaminants

Neha Tiwari, Bhavika Garua and Jai Gopal Sharma

Pages 341-372



Purchase

View chapter >

View abstract ✓



Book chapter ○ Abstract only

16 - Microbial community diversity in a wastewater treatment plant

Shruthi Mohan, Premchand Subhash Chigadannavar, ... Randhir K. Bharti

Pages 373-385



Purchase

View chapter >

View abstract ✓



Book chapter ○ Abstract only

17 - Molecular biology techniques for the identification of microbial community in wastewater treatment reactors

Praveen Dahiya, Ayushi Varshney and Sumedha Mohan

Pages 387-411



Purchase

View chapter >

View abstract ✓



Book chapter ○ Abstract only

18 - Aerobic sludge granulation and enhanced dicamba removal efficiency in the presence of AQS redox mediator in a lab-scale anaerobic-aerobic treatment method

Mahesh Gajanuru Basappa and Basavaraju Manu

Pages 413-434



Purchase

View chapter >

View abstract ✓

19 - Unraveling microbial complexities via metagenomic approach: Expanding cross-talk for environment management and prospecting

Rohan Pawar, Ananya Nayak, ... Jayashankar Das

Pages 435-453


 Purchase View chapter > View abstract ✓

☐ Book chapter ☐ Abstract only

20 - Metagenomics: A computational approach in emergence of novel applications

Shruti Awasthi, Shubha Dwivedi and Naveen Dwivedi

Pages 455-482


 Purchase View chapter > View abstract ✓

☐ Book chapter ☐ Abstract only

21 - Microbial community analysis of wastewater during blackwater treatment

Nitish Venkateswarlu Mogili and Sanjeeb Mohapatra

Pages 483-507

 Purchase View chapter > View abstract ✓

☐ Book chapter ☐ Abstract only

22 - Molecular biological techniques used in environmental engineering: current prospects and challenges

Vandita Anand and Anjana Pandey

Pages 509-536

 Purchase View chapter > View abstract ✓

☐ Book chapter ☐ Abstract only

23 - Removal of heavy metals by microbial communities

Sougata Ghosh, Komal Joshi and Thomas J. Webster

Pages 537-566

 Purchase [View chapter >](#) [View abstract ✓](#)

☐ Book chapter ☐ Abstract only

24 - Antibiotic-resistant bacteria and antibiotic resistance genes profile in wastewater treatment plants by using genomic approaches

Indranil Chattopadhyay

Pages 567-582

 Purchase [View chapter >](#) [View abstract ✓](#)

☐ Book chapter ☐ Abstract only

25 - Bacterial community structure, composition and their role in biological wastewater treatment reactors plants

Nimmy Srivastava and Jayeeta Chattopadhyay

Pages 583-597

 Purchase [View chapter >](#) [View abstract ✓](#)

☐ Book chapter ☒ Full text access

Index

Pages 599-618

 [View PDF](#) [View chapter >](#)



9 - Metagenomics: a powerful lens viewing the microbial world

Lakhan Kumar¹, Rohit Satyam², Navneeta Bharadvaja¹

[Show more](#) ▼

[+](#) Add to Mendeley [Share](#) [Cite](#)

<https://doi.org/10.1016/B978-0-12-823991-9.00007-1>

[Get rights and content](#) ↗

Abstract

Metagenomics—as the name suggests—deals with the metadata of several genomes in order to provide quick and reliable information on the composition and distribution of an interacting microbial population in an ecosystem. Activities of microbial communities are an integral part of an ecosystem's functioning. They also influence the system's productivity and long-term sustainability. Despite several scientific and technological advancements in biology and the development of several bioinformatics tools and techniques, it is almost impossible to isolate and identify all microorganisms from any



An Innovative Role of Biofiltration in Wastewater Treatment Plants (WWTPs)

Book • 2022



Edited by:
Maulin Shah, Susana Rodriguez-Couto and
Jeyanthi Binnas

↓ About the book

Browse this book



By table of contents



Purchase book



Share this book

Book description

Many physico-chemical and operational factors influence the performance, treatment costs and long-term stability of biofilters for the treatment of wastewater. An Innovative Role a ... [read full description](#)

Description

Many physico-chemical and operational factors influence the performance, treatment costs and long-term stability of biofilters for the treatment of wastewater. *An Innovative Role of Biofiltration in Wastewater Treatment Plants* focuses on identifying the factors that affect biofiltration, such as the hydraulic retention time of the biofiltration system, the type and characteristics of the filter and the attached biomass, explains their influence and provides guidelines on how to control these factors to optimize better operation with respect to pollutant control present in wastewater treatment plants (WWTPs). The fundamental basis of treatment in biofilters is the action of pollutant-degrading microorganisms and consequently the book also discusses in depth about the microbial ecology of biofiltration. In addition, it explores the applications of biofiltration including the removal of emerging pollutants.

Key Features

- Describes the microbial ecology of biofiltration
- Includes modeling of biofiltration
- Describes the designing of biofilters, start-up, and monitoring
- Discusses the mechanism of biofiltration
- Describes the controlling and operational factors of biofiltration

Details

ISBN

978-0-12-823946-9

Language

English

Published

2022

Copyright

Copyright © 2022 Elsevier Inc. All rights reserved.

Imprint

Elsevier

DOI

<https://doi.org/10.1016/C2020-0-00091->

Table of contents

Actions for selected chapters

[Select all](#) / [Deselect all](#)



Export citations

☐ [Full text access](#)

Front Matter, Front Matter, Copyright, Contents, Contributors

☐ [Book chapter](#) [Abstract only](#)

Chapter 1 - Importance of biofilters in heavy metal removal: Fundamental to recent advances

Himja Tiwari, Nishit Savla, ... Kanu priya

Pages 1-18



Purchase

[View chapter](#) >

[View abstract](#) v

☐ [Book chapter](#) [Abstract only](#)

Chapter 2 - Biofiltration treatment of wastewater through microbial ecology

Satyendra Tripathi and Touseef Hussain

Pages 19-44



Purchase

[View chapter](#) >

[View abstract](#) v

☐ [Book chapter](#) [Abstract only](#)

Chapter 3 - Removal of volatile organic compounds and heavy metals through the biological-based process

Surbhi Sharma, Mukesh Meena, ... Amit Kumar Gupta

☐ Book chapter ☐ Abstract only

Chapter 4 - Arsenic removing prokaryotes as potential biofilters

Sougata Ghosh, Nikunj Khunt and Thomas J. Webster

Pages 65-86



Purchase

View chapter >

View abstract ✓

☐ Book chapter ☐ Abstract only

Chapter 5 - Vermifilter: A biofilter with earthworms for wastewater treatment

Sudipti Arora, Sakshi Saraswat and A.A. Kazmi

Pages 87-112



Purchase

View chapter >

View abstract ✓

☐ Book chapter ☐ Abstract only

Chapter 6 - Recent trends and future perspectives in applications of biofiltration

Ananya Naha, Swastika Saha, ... Santosh Kumar Jha

Pages 113-136



Purchase

View chapter >

View abstract ✓

☐ Book chapter ☐ Abstract only

Chapter 7 - Biofiltration techniques in the remediation of hazardous inorganic and organic contaminants

Ankita Jha, Nandhan Kadaranahalli Narasimhaiah, ... Randhir Kumar Bharti

Pages 137-154



Purchase

View chapter >

View abstract ✓

☐ Book chapter ☐ Abstract only

Chapter 8 - Recent advances on the treatment of domestic wastewater by biological aerated filter

Hui Xu, Bo Yang, ... Wolfgang Sand

Pages 155-170

 Purchase [View chapter >](#) [View abstract ✓](#)

☐ Book chapter ☐ Abstract only

Chapter 9 - Biofiltration in wastewater treatment plants: An overview

K.N. Yogalakshmi, Avimanu Sharma and Sunil Mittal

Pages 171-188

 Purchase [View chapter >](#) [View abstract ✓](#)

☐ Book chapter ☐ Abstract only

Chapter 10 - Insights on broad spectrum applications and pertinence of biofiltration in various fields

Shubhangi Parmar, Anupama Shrivastav and Sourish Bhattacharya

Pages 189-206

 Purchase [View chapter >](#) [View abstract ✓](#)

☐ Book chapter ☐ Abstract only

Chapter 11 - Effective utilization of biofiltration techniques for removal of pathogenic microorganisms from wastewater treatment plants

Nimmy Srivastava and Jayeeta Chattopadhyay

Pages 207-216

Chapter 12 - Research and implementations of biofiltration for sustainable water treatment

Palash Dey and Deeplina Das

Pages 217-234



Purchase

[View chapter >](#)

[View abstract v](#)



[Book chapter](#) [Abstract only](#)

Chapter 13 - Microbial ecology of biofiltration

Hiren K. Patel, Rishee K. Kalaria, ... Mehul R. Khimani

Pages 235-266



Purchase

[View chapter >](#)

[View abstract v](#)



[Book chapter](#) [Abstract only](#)

Chapter 14 - Trends in biofiltration applied to remove pharmaceuticals and personal care products from wastewater

Rafael Dorighello Cadamuro, Paula Rogovski, ... Gislaine Fongaro

Pages 267-284



Purchase

[View chapter >](#)

[View abstract v](#)



[Book chapter](#) [Abstract only](#)

Chapter 15 - Removal of volatile organic carbon and heavy metals through microbial approach

P. Senthil Kumar and P. Tsopbou Ngueagni

Pages 285-308



Purchase

[View chapter >](#)

[View abstract v](#)

Chapter 16 - Pollutants removal from textile wastewater by biofilter

Md Imran Howlader, Zinnat Morsada and Md. Milon Hossain

Pages 309-330



Purchase

[View chapter >](#)

[View abstract ✓](#)

□ [Book chapter](#) ○ [Abstract only](#)

Chapter 17 - Biological based methods for the removal of volatile organic compounds and heavy metals

Shalini Srivastava, S.B. Agrawal and Monoj Kumar Mondal

Pages 331-346



Purchase

[View chapter >](#)

[View abstract ✓](#)

□ [Book chapter](#) ○ [Abstract only](#)

Chapter 18 - Recent development in membrane biofilm reactor (MBfR): A critical review

Sudheer Kumar Shukla, Hajar Ali Salim Al Bahlouli, ... Hafez Al Sadeq

Pages 347-368



Purchase

[View chapter >](#)

[View abstract ✓](#)

□ [Book chapter](#) ○ [Abstract only](#)

Chapter 19 - A critical review on biofiltration for wastewater treatment: Focus on organic micropollutants

Deniz İzlen Çifçi and Süreyya Meriç

Pages 369-388



Purchase

[View chapter >](#)

[View abstract ✓](#)

☐ Book chapter ☐ Abstract only

Chapter 20 - Biofiltration: A modern technology for wastewater treatment

Naveen Dwivedi and Shubha Dwivedi

Pages 389-410

 Purchase [View chapter >](#) [View abstract v](#)

☐ Book chapter ☐ Abstract only

Chapter 21 - Role of biofiltration in the treatment of sewage

Himanshu K Khuntia, Sanjeeb Mohapatra, ... Hoysala N Chanakya

Pages 411-438

 Purchase [View chapter >](#) [View abstract v](#)

☐ Book chapter ☐ Abstract only

Chapter 22 - Occurrence and biological removal of VOCs and organic micropollutants

Urszula Kotowska

Pages 439-458

 Purchase [View chapter >](#) [View abstract v](#)

☐ Book chapter ☐ Abstract only

Chapter 23 - Biofiltration: An emerging and promising technology for the treatment of water and air pollutants

Surbhi Sinha, Parul Chugh, ... Rachana Singh

Pages 459-476

 Purchase [View chapter >](#) [View abstract v](#)

☐ Book chapter  Abstract only

Chapter 24 - Biofiltration as a green technology for abatement of volatile organic compounds (VOCs): A synoptic review

Priyanka Sarkar, Harshit Tiwari, ... Apurba Dey

Pages 477-496



Purchase

View chapter >

View abstract >

☐ Book chapter  Full text access

Index

Pages 497-502



View PDF

View chapter >



Chapter 7 - Biofiltration techniques in the remediation of hazardous inorganic and organic contaminants

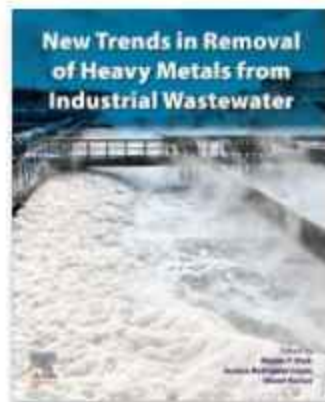
Ankita Jha^a *, Nandhan Kadaranaahalli Narasimhaiah^a *, Niranjana Sreekumar^a *,
Pallavi Akkishetty Mallikarjuna Babu^a *, Pavithra Umashankar^a *, Shruthi Mohan^a *,
Uma Mahesh^a *, Naela Azhar Sharief^a *, Ketaki Prakash Ghatole^a *, Priyadarshini Dey^a *,
Deepak Gola^b *, Nitin Chauhan^c *, Randhir Kumar Bharti^d *

^a Department of Biotechnology, Ramaiah Institute of Technology, Bengaluru, India

^b Department of Biotechnology, Noida Institute of Engineering and Technology, Noida, India

^c Department of Microbiology, Swami Shraddhanand College, University of Delhi, New Delhi, India

^d University School of Environmental Management, Guru Gobind Singh Indraprastha University, New Delhi, India



New Trends in Removal of Heavy Metals from Industrial Wastewater

1st Edition - April 23, 2021 • Imprint: Elsevier

Editors: Maulin P. Shah, Susana Rodriguez-Couto, Vineet Kumar • Language: English

Paperback ISBN: 9780128229651 • eBook ISBN: 9780128231081

Description

New Trends in Removal of Heavy Metals from Industrial Wastewater covers the applicable technologies relating to the removal of heavy metals from wastewater and new and emerging trends in the field, both at the laboratory and industrial scale. Sections explore new environmentally friendly technologies, the principles of sustainable development, the main factors contributing to heavy metal removal from wastewater, methods and procedures, materials (especially low-cost materials originated from industrial and agricultural waste), management of wastewater containing heavy metals and wastewater valorization, recycling, environmental impact, and wastewater policies for post heavy metal removal.

This book is an advanced and updated vision of existing heavy metal removal technologies with their limitations and challenges and their potential application to remove heavy metals/environmental pollutants through advancements in bioremediation. Finally, sections also cover new trends and advances in environmental bioremediation with recent developments in this field by an application of chemical/biochemical and environmental biotechnology.

Table of contents



1. Introduction
2. Types of heavy metals and their effect in wastewater
3. Current physico-chemical treatment technologies available for remediation of different types of heavy metals from wastewater
4. Biological wastewater treatment technology; advancement and drawbacks for the remediation of heavy metals
5. Hurdles in wastewater treatment plants (WWTPs) performance optimization for the remediation of heavy metals
6. Role of bacteria and algae in remediation of heavy metals from WWTPs
7. Modified and new adsorbents for the removal of heavy metals from wastewater
8. Removal of heavy metals using bentonite clay and inorganic coagulants
9. Sustainable heavy metal remediation
10. Efficient techniques for the removal of toxic heavy metals from wastewater
11. Full-Scale implementation of a vertical membrane bioreactor for remediation of heavy metals from wastewater
12. Low-cost adsorbents, techniques and heavy metal removal efficiency
13. Removal of heavy metals from mine waters by natural zeolites
14. Functionalized magnetic nanoparticles for heavy metal removal from aqueous solutions: kinetics and equilibrium modelling
15. Heavy metals in water: presence, removal and safety
16. Mechanisms of heavy metal removal using microorganisms as biosorbents
17. Heavy metal removal by bioaccumulation using genetically engineered microorganisms
18. Genetic engineering of *Escherichia coli* for enhanced uptake and bioaccumulation of mercury
19. New trends in removing heavy metals from industrial wastewater
20. The construction of an engineered bacterium to remove cadmium from wastewater
21. Genetic engineering of bacteria and their potential for heavy metal bioremediation
22. Biosorption and bioaccumulation - the prospects for practical applications
23. Batch and continuous removal of heavy metals from industrial effluents using microbial consortia



Chapter 13 - Prospects of algae and bacteria in the remediation of hazardous metals from wastewater

Deepak Gola¹, Nitin Chauhan², Randhir K. Bharti³, Priyadarshini Dey⁴, Krishna Murthy TP⁴,
Medha Bajpai¹

Show more ▾

+ Add to Mendeley  Share  Cite

<https://doi.org/10.1016/B978-0-12-822965-1.00013-1> ↗

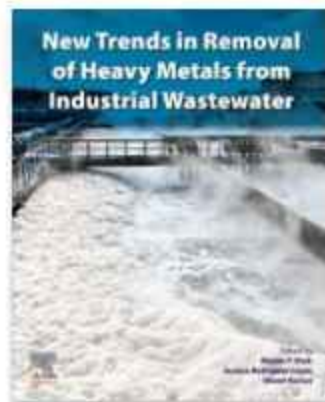
[Get rights and content](#) ↗

Abstract

Increased industrial activities have contributed majorly toward the generation of

Abstract

Increased industrial activities have contributed majorly toward the generation of wastewater comprising hazardous heavy metals. These are invariably released into the water bodies like rivers and streams. Microorganisms such as bacteria and algae play pivotal role in remediating these heavy metals through their inherent mechanisms of bioaccumulation and biosorption. Although laboratory studies have described the remediation of heavy metals via bacteria and algae in small setups. But remediation of heavy metals in actual wastewater is difficult because of its complex nature (multiple organic and inorganic contaminants are present simultaneously) and hence the heavy metal removal efficiency of bacteria and algae decreases drastically. This chapter mainly focused on the studies describing metal removal efficacies of bacteria and algae in synthetic and actual wastewaters. In addition to this, studies highlighting various bioreactor systems, their configuration, and their optimization for improved remediation have also been included. Moreover, it was also realized that further research is important to understand the insights of process mechanisms, selection of best microbial strains, and development of suitable bioreactors for efficient removal of heavy metals.



New Trends in Removal of Heavy Metals from Industrial Wastewater

1st Edition - April 23, 2021 • Imprint: Elsevier

Editors: Maulin P. Shah, Susana Rodriguez-Couto, Vineet Kumar • Language: English

Paperback ISBN: 9780128229651 • eBook ISBN: 9780128231081

Description

New Trends in Removal of Heavy Metals from Industrial Wastewater covers the applicable technologies relating to the removal of heavy metals from wastewater and new and emerging trends in the field, both at the laboratory and industrial scale. Sections explore new environmentally friendly technologies, the principles of sustainable development, the main factors contributing to heavy metal removal from wastewater, methods and procedures, materials (especially low-cost materials originated from industrial and agricultural waste), management of wastewater containing heavy metals and wastewater valorization, recycling, environmental impact, and wastewater policies for post heavy metal removal.

This book is an advanced and updated vision of existing heavy metal removal technologies with their limitations and challenges and their potential application to remove heavy metals/environmental pollutants through advancements in bioremediation. Finally, sections also cover new trends and advances in environmental bioremediation with recent developments in this field by an application of chemical/biochemical and environmental biotechnology.

Table of contents

1. Introduction
2. Types of heavy metals and their effect in wastewater
3. Current physico-chemical treatment technologies available for remediation of different types of heavy metals from wastewater
4. Biological wastewater treatment technology; advancement and drawbacks for the remediation of heavy metals
5. Hurdles in wastewater treatment plants (WWTPs) performance optimization for the remediation of heavy metals
6. Role of bacteria and algae in remediation of heavy metals from WWTPs
7. Modified and new adsorbents for the removal of heavy metals from wastewater
8. Removal of heavy metals using bentonite clay and inorganic coagulants
9. Sustainable heavy metal remediation
10. Efficient techniques for the removal of toxic heavy metals from wastewater
11. Full-Scale implementation of a vertical membrane bioreactor for remediation of heavy metals from wastewater
12. Low-cost adsorbents, techniques and heavy metal removal efficiency
13. Removal of heavy metals from mine waters by natural zeolites
14. Functionalized magnetic nanoparticles for heavy metal removal from aqueous solutions: kinetics and equilibrium modelling
15. Heavy metals in water: presence, removal and safety
16. Mechanisms of heavy metal removal using microorganisms as biosorbents
17. Heavy metal removal by bioaccumulation using genetically engineered microorganisms
18. Genetic engineering of *Escherichia coli* for enhanced uptake and bioaccumulation of mercury
19. New trends in removing heavy metals from industrial wastewater
20. The construction of an engineered bacterium to remove cadmium from wastewater
21. Genetic engineering of bacteria and their potential for heavy metal bioremediation
22. Biosorption and bioaccumulation - the prospects for practical applications
23. Batch and continuous removal of heavy metals from industrial effluents using microbial consortia



Chapter 13 - Prospects of algae and bacteria in the remediation of hazardous metals from wastewater

Deepak Gola¹, Nitin Chauhan², Randhir K. Bharti³, Priyadarshini Dey⁴, Krishna Murthy TP⁴,
Medha Bajpai¹

Show more ▾

+ Add to Mendeley  Share  Cite

<https://doi.org/10.1016/B978-0-12-822965-1.00013-1> ↗

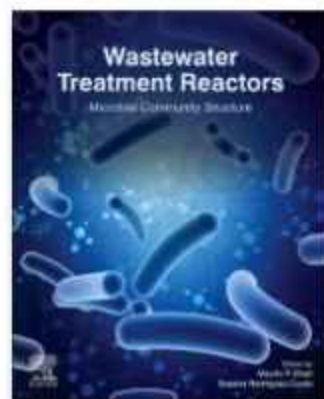
[Get rights and content](#) ↗

Abstract

Increased industrial activities have contributed majorly toward the generation of

Abstract

Increased industrial activities have contributed majorly toward the generation of wastewater comprising hazardous heavy metals. These are invariably released into the water bodies like rivers and streams. Microorganisms such as bacteria and algae play pivotal role in remediating these heavy metals through their inherent mechanisms of bioaccumulation and biosorption. Although laboratory studies have described the remediation of heavy metals via bacteria and algae in small setups. But remediation of heavy metals in actual wastewater is difficult because of its complex nature (multiple organic and inorganic contaminants are present simultaneously) and hence the heavy metal removal efficiency of bacteria and algae decreases drastically. This chapter mainly focused on the studies describing metal removal efficacies of bacteria and algae in synthetic and actual wastewaters. In addition to this, studies highlighting various bioreactor systems, their configuration, and their optimization for improved remediation have also been included. Moreover, it was also realized that further research is important to understand the insights of process mechanisms, selection of best microbial strains, and development of suitable bioreactors for efficient removal of heavy metals.



Wastewater Treatment Reactors

Microbial Community Structure

1st Edition - May 12, 2021 • Imprint: Elsevier

Editors: Maulin P. Shah, Susana Rodriguez-Couto • Language: English

Paperback ISBN: 9780128239919 • eBook ISBN: 9780128242445

Description

Wastewater Treatment Reactors: Microbial Community Structure analyzes microbial community structure in relation to changes in physico-chemical parameters, the gene content (metagenome) or gene expression (metatranscriptome) of microbial communities in relation to changes in physico-chemical parameters, physiological aspects of microbial communities, enrichment cultures or pure cultures of key species in relation to changes in physico-chemical parameters, and modeling of potential consequences of changes in microbial community structure or function for higher trophic levels in a given habitat.

As several studies have been carried out to understand bulking phenomena and the importance of environmental factors on sludge settling characteristics, which are thought to be strongly influenced by flocculation, sludge bulking, foaming and rising, this book is an ideal resource on the topics covered.

1. Strategic approach for characterization of bacterial community in enhanced biological phosphate removal process
2. Removal of pollutants from wastewater via biological method and shift in microbial community profile during treatment process
3. Nitrogen removal bacterial communities characteristics and dynamics at lab scale reactors
4. Role of the microbial community in the anaerobic digester for biomethane production
5. Microbial diversity, interactions and biodegradation of hazardous textile wastewater using biological consortium technology
6. An overview of theoretical and experimental approach to study environmental microflora
7. Microbial diversity, interactions and biodegradation of organic and inorganic contaminants
8. Metagenomics- A field revealing the secrets into microbial world of waste water treatment plants.
9. Metagenomics: a powerful lens viewing the microbial world
10. Environmental Parameters Affecting Anaerobic Microbial Community
11. Molecular techniques used to identify perfluorooctanoic acid degrading bacteria/ microbes and their applications in wastewater treatment reactor/plant
12. Enhanced biological phosphate removal process for wastewater treatment: a sustainable approach
13. Modelling microbial communities: Consensual among experimentalist and theorist
14. Metagenomics: a powerful lens viewing the microbial world

15. Microbial diversity, interactions and Biodegradation/Biotransformation of organic and inorganic contaminants
16. Microbial community diversity in a waste water treatment plant
17. Molecular Biology Techniques for the Identification of Microbial Community in Waste- Water Treatment Reactors
18. Aerobic sludge granulation and enhanced dicamba removal efficiency in the presence of AQS redox mediator in a lab scale anaerobic-aerobic treatment method
19. Unraveling microbial complexities via metagenomic approach: Expanding cross-talk for environment management & Prospecting
20. Metagenomics: A computational approach in emergence of novel applications
21. Microbial Community Analysis of Domestic Wastewater during Blackwater Treatment
22. Molecular Biological Techniques used in Environmental Engineering: Current prospects and challenges
23. Removal of Heavy Metals by Microbial Communities
24. A comprehensive insight into tetracycline resistant bacteria and antibiotic resistance genes in activated sludge using next-generation sequencing
25. Bacterial Community Structure, Composition and Their Role in Biological Wastewater Treatment Reactors Plants



Wastewater Treatment Reactors

Microbial Community Structure

2021, Pages 373-385



16 - Microbial community diversity in a wastewater treatment plant

Shruthi Mohan¹ *, Premchand Subhash Chigadannavar¹ *, Zeba Quadri¹ *, Priyadarshini Dey¹ *, Deepak Gola² *, Nitin Chauhan³ *, Randhir K. Bharti⁴ *

Show more ✓

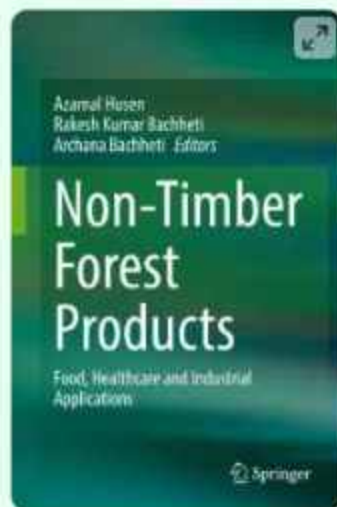
+ Add to Mendeley  Share  Cite

<https://doi.org/10.1016/B978-0-12-823991-9.00013-7> ↗

[Get rights and content](#) ↗

Abstract

Effluents from different industries are rampantly being discharged into the natural water bodies. Thus it is pertinent to treat this wastewater pollution from different sources before discharging it to the environment. The most extensively used biological process for the treatment of wastewater plant is the activated sludge process. The activated sludge process has shown high nutrient removal, biomass retention capacities, and removal of toxins, due to which activated sludge processes are a lucrative option for treating the wastewater. The diverse microbial communities comprising bacteria, fungi, protozoa, viruses, algae, and metazoa account for 95% of the microbes and play a chief role in the wastewater treatment. Many high-throughput techniques, such as metagenomics, metatranscriptomics, and metaproteomics, are utilized to decipher the functional aspects of these microbial communities.



Non-Timber Forest Products

Food, Healthcare and Industrial Applications

Book | © 2021

Overview

Editors: [Azamal Husen](#), [Rakesh Kumar Bachheti](#), [Archana Bachheti](#)

- A collection of recent and updated reviews of the multiple roles of NTFPs
- Discusses the forest-based herbs, grasses, climbers, shrubs, and trees used for food, fodder, fuel, beverages, medicine; as well as their several products
- Highlights the NTFPs development and promotion to reduce the destruction of the biodiversity
- Caters to a wide audience including forester, botanist, economic botanist, ecologists, biologists, and forestry sector scientists, experts, and consultants

Bibliographic Information

Book Title

Non-Timber Forest Products

Book Subtitle

Food, Healthcare and Industrial
Applications

Editors

Azamal Husen, Rakesh Kumar
Bachheti, Archana Bachheti

DOI

<https://doi.org/10.1007/978-3-030-73077-2>

Publisher

Springer Cham

eBook Packages

Biomedical and Life Sciences,
Biomedical and Life Sciences
(RO)

Copyright Information

The Editor(s) (if applicable) and
The Author(s), under exclusive
license to Springer Nature
Switzerland AG 2021

Hardcover ISBN

978-3-030-73076-5
Published: 31 July 2021

Softcover ISBN

978-3-030-73079-6
Published: 31 July 2022

eBook ISBN

978-3-030-73077-2
Published: 30 July 2021

Edition Number

1

Number of Pages

XVII, 473

Table of contents (18 chapters)

Front Matter

[Download chapter PDF](#) 

Pages i–xviii

Potential Role of Forest-Based Plants in Essential Oil Production: An Approach to Cosmetic and Personal Health Care Applications

Limenew Abate, Archana Bachheti, Rakesh Kumar Bachheti, Azamal Husen, Mesfin Getachew, D. P. Pandey
Pages 1–18

Aromatic Oils from Forest and Their Application

Sandra Gonçalves, Anabela Romano
Pages 19–37

Role of Traditional Chewing Sticks in Oral Hygiene and Other Benefits

Fekade Beshah, Yilma Hunde, Mesfin Getachew, Rakesh Kumar Bachheti, Azamal Husen, Archana Bachheti
Pages 39–73

Plant-Based Sweeteners and Their Applications in Modern Lifestyle

Sandeep Kumar, Pankaj Kumar Tyagi, Deepak Gola, Ankit Kumar Mishra, Arvind Arya
Pages 75–103

Nutritional, Pharmaceutical, and Industrial Potential of Forest-Based Plant Gum

Md. Adnan, Ki Kwang Oh, Dong Ha Cho, Madhusudhan Alle
Pages 105–128

Commercial, Cosmetic, and Medicinal Importance of Sandal (*Santalum album*): A Valuable Forest Resource

Salman Khan, Mohsin Ikram, Mohammad Faisal
Pages 129–144

Forest-Based Edible Seeds and Nuts for Health Care and Disease Control

Yakob Godebo Godeto, Archana Bachheti, Azamal Husen, D. P. Pandey, Rakesh Kumar Bachheti
Pages 145–174

Medicinal Plants of Himalayan Forests

Sakshi Painuli, Prabhakar Semwal, Natália Cruz-Martins, Rakesh Kumar Bachheti
Pages 175–212

Forest-Based Medicinal Plants for Cardiovascular Diseases

Arvind Arya, Sandeep Kumar, Pankaj Kumar Tyagi, Deepak Gola, Ankit Kumar Mishra
Pages 213–227

Potential Role of Medicinal Plants in the Cure of Liver and Kidney Diseases

Shakeelur Rahman, Azamal Husen

Pages 229–254

Forest-Based Medicinal Plants for Cancer Cure

Anamika Rana, Jigisha Anand, Manjusha Tyagi, Nishant Rai

Pages 255–280

Health Benefit, Traditional, and Modern Uses of Natural Honey

Swati Sachdev, Anil Kumar, Mohammad Israil Ansari

Pages 281–299

Spices Obtained from Forest and Other Resources

Adita Mishra, Shraddha Rawat, Ved Prakash Singh, Shweta Gautam, Gulab Singh

Pages 301–323

***Ganoderma lucidum*: King of Mushroom**

Mustafa Nadhim Owaid

Pages 325–337

Health-Promoting Benefits, Value-Added Products, and Other Uses of Banana

Abrha Mengstu, Archana Bachheti, Limenew Abate, Rakesh Kumar Bachheti, Azamal Husen
Pages 339–364

Forest-based Plants in Beautification and Their Medicinal Significance

Manu Pant, Priyanka Thakur
Pages 365–381

Food, Fodder and Fuelwoods from Forest

Sugam Gupta, Devvret Verma, Neema Tufchi, Anshul Kamboj, Archana Bachheti, Rakesh Kumar Bachheti et al.
Pages 383–425

Fiber from Forest and Their Importance in Modern Time

Surendra Pratap Singh
Pages 427–453

Back Matter

Pages 455–473

[Download chapter PDF](#) 

SPRINGER NATURE Link

[Find a journal](#)

[Publish with us](#)

[Track your research](#)

 [Search](#)

[Home](#) > [Non-Timber Forest Products](#) > Chapter

Forest-Based Medicinal Plants for Cardiovascular Diseases

Chapter | First Online: 31 July 2021

pp 213–227 | [Cite this chapter](#)

[Arvind Arya](#), [Sandeep Kumar](#), [Pankaj Kumar Tyagi](#), [Deepak Gola](#) & [Ankit Kumar Mishra](#)

Cite this chapter

Arya, A., Kumar, S., Tyagi, P.K., Gola, D., Mishra, A.K. (2021). Forest-Based Medicinal Plants for Cardiovascular Diseases. In: Husen, A., Bachheti, R.K., Bachheti, A. (eds) Non-Timber Forest Products. Springer, Cham. https://doi.org/10.1007/978-3-030-73077-2_9

Download citation

[.RIS](#) [.ENW](#) [.BIB](#)

DOI

https://doi.org/10.1007/978-3-030-73077-2_9

Published

31 July 2021

Publisher Name

Springer, Cham

Print ISBN

978-3-030-73076-5

Online ISBN

978-3-030-73077-2

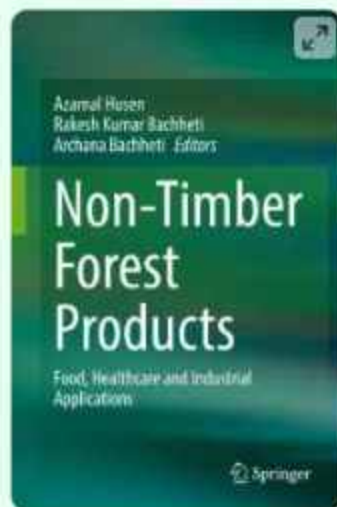
eBook Packages

Biomedical and Life
Sciences

Biomedical and Life
Sciences (R0)

Abstract

Cardiovascular diseases (CVDs) have become a common disease threat worldwide among men and women. CVDs include different pathologies, such as coronary heart disease, congenital heart disease, and cerebrovascular disease. There is historical evidence, which describes the beneficial and preventive effects of vegetables, fruits, and herbs in CVDs. There are several medicines obtained from plants that are being used in the treatment of heart diseases. In comparison to standard modern medicines, herbal preparations are being used due to their cost-effectiveness and a belief that they have comparatively less side effects. However, the safety-related beliefs about herbal medicines need to be tested through research. In the present book chapter, the medicinal plants and their application in the treatment of CVDs are summarized. The pharmacological potential of various medicinal herbs against CVD has been also discussed.



Non-Timber Forest Products

Food, Healthcare and Industrial Applications

Book | © 2021

Overview

Editors: [Azamal Husen](#), [Rakesh Kumar Bachheti](#), [Archana Bachheti](#)

- A collection of recent and updated reviews of the multiple roles of NTFPs
- Discusses the forest-based herbs, grasses, climbers, shrubs, and trees used for food, fodder, fuel, beverages, medicine; as well as their several products
- Highlights the NTFPs development and promotion to reduce the destruction of the biodiversity
- Caters to a wide audience including forester, botanist, economic botanist, ecologists, biologists, and forestry sector scientists, experts, and consultants

Bibliographic Information

Book Title

Non-Timber Forest Products

Book Subtitle

Food, Healthcare and Industrial
Applications

Editors

Azamal Husen, Rakesh Kumar
Bachheti, Archana Bachheti

DOI

<https://doi.org/10.1007/978-3-030-73077-2>

Publisher

Springer Cham

eBook Packages

Biomedical and Life Sciences,
Biomedical and Life Sciences
(RO)

Copyright Information

The Editor(s) (if applicable) and
The Author(s), under exclusive
license to Springer Nature
Switzerland AG 2021

Hardcover ISBN

978-3-030-73076-5
Published: 31 July 2021

Softcover ISBN

978-3-030-73079-6
Published: 31 July 2022

eBook ISBN

978-3-030-73077-2
Published: 30 July 2021

Edition Number

1

Number of Pages

XVII, 473

Table of contents (18 chapters)

Front Matter

[Download chapter PDF](#) 

Pages i–xviii

Potential Role of Forest-Based Plants in Essential Oil Production: An Approach to Cosmetic and Personal Health Care Applications

Limenew Abate, Archana Bachheti, Rakesh Kumar Bachheti, Azamal Husen, Mesfin Getachew, D. P. Pandey
Pages 1–18

Aromatic Oils from Forest and Their Application

Sandra Gonçalves, Anabela Romano
Pages 19–37

Role of Traditional Chewing Sticks in Oral Hygiene and Other Benefits

Fekade Beshah, Yilma Hunde, Mesfin Getachew, Rakesh Kumar Bachheti, Azamal Husen, Archana Bachheti
Pages 39–73

Plant-Based Sweeteners and Their Applications in Modern Lifestyle

Sandeep Kumar, Pankaj Kumar Tyagi, Deepak Gola, Ankit Kumar Mishra, Arvind Arya
Pages 75–103

Nutritional, Pharmaceutical, and Industrial Potential of Forest-Based Plant Gum

Md. Adnan, Ki Kwang Oh, Dong Ha Cho, Madhusudhan Alle

Pages 105–128

Commercial, Cosmetic, and Medicinal Importance of Sandal (*Santalum album*): A Valuable Forest Resource

Salman Khan, Mohsin Ikram, Mohammad Faisal

Pages 129–144

Forest-Based Edible Seeds and Nuts for Health Care and Disease Control

Yakob Godebo Godeto, Archana Bachheti, Azamal Husen, D. P. Pandey, Rakesh Kumar Bachheti

Pages 145–174

Medicinal Plants of Himalayan Forests

Sakshi Painuli, Prabhakar Semwal, Natália Cruz-Martins, Rakesh Kumar Bachheti

Pages 175–212

Forest-Based Medicinal Plants for Cardiovascular Diseases

Arvind Arya, Sandeep Kumar, Pankaj Kumar Tyagi, Deepak Gola, Ankit Kumar Mishra

Pages 213–227

Potential Role of Medicinal Plants in the Cure of Liver and Kidney Diseases

Shakeelur Rahman, Azamal Husen

Pages 229–254

Forest-Based Medicinal Plants for Cancer Cure

Anamika Rana, Jigisha Anand, Manjusha Tyagi, Nishant Rai

Pages 255–280

Health Benefit, Traditional, and Modern Uses of Natural Honey

Swati Sachdev, Anil Kumar, Mohammad Israil Ansari

Pages 281–299

Spices Obtained from Forest and Other Resources

Adita Mishra, Shraddha Rawat, Ved Prakash Singh, Shweta Gautam, Gulab Singh

Pages 301–323

***Ganoderma lucidum*: King of Mushroom**

Mustafa Nadhim Owaid

Pages 325–337

Health-Promoting Benefits, Value-Added Products, and Other Uses of Banana

Abrha Mengstu, Archana Bachheti, Limenew Abate, Rakesh Kumar Bachheti, Azamal Husen
Pages 339–364

Forest-based Plants in Beautification and Their Medicinal Significance

Manu Pant, Priyanka Thakur
Pages 365–381

Food, Fodder and Fuelwoods from Forest

Sugam Gupta, Devvret Verma, Neema Tufchi, Anshul Kamboj, Archana Bachheti, Rakesh Kumar Bachheti et al.
Pages 383–425

Fiber from Forest and Their Importance in Modern Time

Surendra Pratap Singh
Pages 427–453

Back Matter

Pages 455–473


[Download chapter PDF](#) 

SPRINGER NATURE Link

[Find a journal](#)

[Publish with us](#)

[Track your research](#)

 [Search](#)

[Home](#) > [Non-Timber Forest Products](#) > Chapter

Forest-Based Medicinal Plants for Cardiovascular Diseases

Chapter | First Online: 31 July 2021

pp 213–227 | [Cite this chapter](#)

[Arvind Arya](#), [Sandeep Kumar](#), [Pankaj Kumar Tyagi](#), [Deepak Gola](#) & [Ankit Kumar Mishra](#)

Cite this chapter

Arya, A., Kumar, S., Tyagi, P.K., Gola, D., Mishra, A.K. (2021). Forest-Based Medicinal Plants for Cardiovascular Diseases. In: Husen, A., Bachheti, R.K., Bachheti, A. (eds) Non-Timber Forest Products. Springer, Cham. https://doi.org/10.1007/978-3-030-73077-2_9

Download citation

[.RIS](#) [.ENW](#) [.BIB](#)

DOI

https://doi.org/10.1007/978-3-030-73077-2_9

Published

31 July 2021

Publisher Name

Springer, Cham

Print ISBN

978-3-030-73076-5

Online ISBN

978-3-030-73077-2

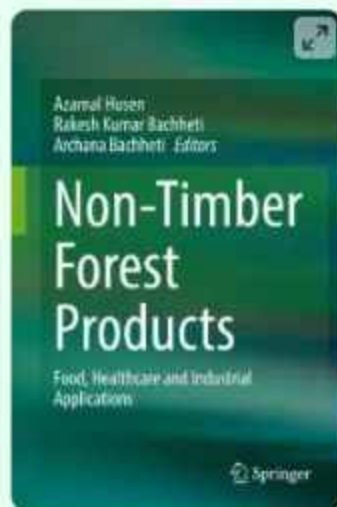
eBook Packages

Biomedical and Life
Sciences

Biomedical and Life
Sciences (R0)

Abstract

Cardiovascular diseases (CVDs) have become a common disease threat worldwide among men and women. CVDs include different pathologies, such as coronary heart disease, congenital heart disease, and cerebrovascular disease. There is historical evidence, which describes the beneficial and preventive effects of vegetables, fruits, and herbs in CVDs. There are several medicines obtained from plants that are being used in the treatment of heart diseases. In comparison to standard modern medicines, herbal preparations are being used due to their cost-effectiveness and a belief that they have comparatively less side effects. However, the safety-related beliefs about herbal medicines need to be tested through research. In the present book chapter, the medicinal plants and their application in the treatment of CVDs are summarized. The pharmacological potential of various medicinal herbs against CVD has been also discussed.



Non-Timber Forest Products

Food, Healthcare and Industrial Applications

Book | © 2021

Overview

Editors: [Azamal Husen](#), [Rakesh Kumar Bachheti](#), [Archana Bachheti](#)

- A collection of recent and updated reviews of the multiple roles of NTFPs
- Discusses the forest-based herbs, grasses, climbers, shrubs, and trees used for food, fodder, fuel, beverages, medicine; as well as their several products
- Highlights the NTFPs development and promotion to reduce the destruction of the biodiversity
- Caters to a wide audience including forester, botanist, economic botanist, ecologists, biologists, and forestry sector scientists, experts, and consultants

Bibliographic Information

Book Title

Non-Timber Forest Products

Book Subtitle

Food, Healthcare and Industrial
Applications

Editors

Azamal Husen, Rakesh Kumar
Bachheti, Archana Bachheti

DOI

<https://doi.org/10.1007/978-3-030-73077-2>

Publisher

Springer Cham

eBook Packages

Biomedical and Life Sciences,
Biomedical and Life Sciences
(RO)

Copyright Information

The Editor(s) (if applicable) and
The Author(s), under exclusive
license to Springer Nature
Switzerland AG 2021

Hardcover ISBN

978-3-030-73076-5
Published: 31 July 2021

Softcover ISBN

978-3-030-73079-6
Published: 31 July 2022

eBook ISBN

978-3-030-73077-2
Published: 30 July 2021

Edition Number

1

Number of Pages

XVII, 473

Table of contents (18 chapters)

Front Matter

[Download chapter PDF](#) 

Pages i–xviii

Potential Role of Forest-Based Plants in Essential Oil Production: An Approach to Cosmetic and Personal Health Care Applications

Limenew Abate, Archana Bachheti, Rakesh Kumar Bachheti, Azamal Husen, Mesfin Getachew, D. P. Pandey
Pages 1–18

Aromatic Oils from Forest and Their Application

Sandra Gonçalves, Anabela Romano
Pages 19–37

Role of Traditional Chewing Sticks in Oral Hygiene and Other Benefits

Fekade Beshah, Yilma Hunde, Mesfin Getachew, Rakesh Kumar Bachheti, Azamal Husen, Archana Bachheti
Pages 39–73

Plant-Based Sweeteners and Their Applications in Modern Lifestyle

Sandeep Kumar, Pankaj Kumar Tyagi, Deepak Gola, Ankit Kumar Mishra, Arvind Arya
Pages 75–103

Nutritional, Pharmaceutical, and Industrial Potential of Forest-Based Plant Gum

Md. Adnan, Ki Kwang Oh, Dong Ha Cho, Madhusudhan Alle
Pages 105–128

Commercial, Cosmetic, and Medicinal Importance of Sandal (*Santalum album*): A Valuable Forest Resource

Salman Khan, Mohsin Ikram, Mohammad Faisal
Pages 129–144

Forest-Based Edible Seeds and Nuts for Health Care and Disease Control

Yakob Godebo Godeto, Archana Bachheti, Azamal Husen, D. P. Pandey, Rakesh Kumar Bachheti
Pages 145–174

Medicinal Plants of Himalayan Forests

Sakshi Painuli, Prabhakar Semwal, Natália Cruz-Martins, Rakesh Kumar Bachheti
Pages 175–212

Forest-Based Medicinal Plants for Cardiovascular Diseases

Arvind Arya, Sandeep Kumar, Pankaj Kumar Tyagi, Deepak Gola, Ankit Kumar Mishra
Pages 213–227

Potential Role of Medicinal Plants in the Cure of Liver and Kidney Diseases

Shakeelur Rahman, Azamal Husen

Pages 229–254

Forest-Based Medicinal Plants for Cancer Cure

Anamika Rana, Jigisha Anand, Manjusha Tyagi, Nishant Rai

Pages 255–280

Health Benefit, Traditional, and Modern Uses of Natural Honey

Swati Sachdev, Anil Kumar, Mohammad Israil Ansari

Pages 281–299

Spices Obtained from Forest and Other Resources

Adita Mishra, Shraddha Rawat, Ved Prakash Singh, Shweta Gautam, Gulab Singh

Pages 301–323

***Ganoderma lucidum*: King of Mushroom**

Mustafa Nadhim Owaid

Pages 325–337

Health-Promoting Benefits, Value-Added Products, and Other Uses of Banana

Abrha Mengstu, Archana Bachheti, Limenew Abate, Rakesh Kumar Bachheti, Azamal Husen
Pages 339–364

Forest-based Plants in Beautification and Their Medicinal Significance

Manu Pant, Priyanka Thakur
Pages 365–381

Food, Fodder and Fuelwoods from Forest

Sugam Gupta, Devvret Verma, Neema Tufchi, Anshul Kamboj, Archana Bachheti, Rakesh Kumar Bachheti et al.
Pages 383–425

Fiber from Forest and Their Importance in Modern Time

Surendra Pratap Singh
Pages 427–453

Back Matter

Pages 455–473


[Download chapter PDF](#) 

SPRINGER NATURE Link

[Find a journal](#)

[Publish with us](#)

[Track your research](#)

 [Search](#)

[Home](#) > [Non-Timber Forest Products](#) > Chapter

Forest-Based Medicinal Plants for Cardiovascular Diseases

Chapter | First Online: 31 July 2021

pp 213–227 | [Cite this chapter](#)

[Arvind Arya](#), [Sandeep Kumar](#), [Pankaj Kumar Tyagi](#), [Deepak Gola](#) & [Ankit Kumar Mishra](#)

Cite this chapter

Arya, A., Kumar, S., Tyagi, P.K., Gola, D., Mishra, A.K. (2021). Forest-Based Medicinal Plants for Cardiovascular Diseases. In: Husen, A., Bachheti, R.K., Bachheti, A. (eds) Non-Timber Forest Products. Springer, Cham. https://doi.org/10.1007/978-3-030-73077-2_9

Download citation

[.RIS](#) [.ENW](#) [.BIB](#)

DOI

https://doi.org/10.1007/978-3-030-73077-2_9

Published

31 July 2021

Publisher Name

Springer, Cham

Print ISBN

978-3-030-73076-5

Online ISBN

978-3-030-73077-2

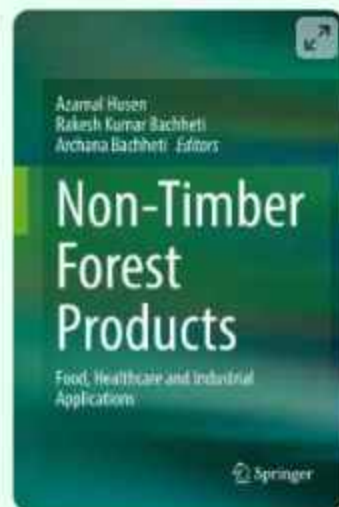
eBook Packages

Biomedical and Life
Sciences

Biomedical and Life
Sciences (R0)

Abstract

Cardiovascular diseases (CVDs) have become a common disease threat worldwide among men and women. CVDs include different pathologies, such as coronary heart disease, congenital heart disease, and cerebrovascular disease. There is historical evidence, which describes the beneficial and preventive effects of vegetables, fruits, and herbs in CVDs. There are several medicines obtained from plants that are being used in the treatment of heart diseases. In comparison to standard modern medicines, herbal preparations are being used due to their cost-effectiveness and a belief that they have comparatively less side effects. However, the safety-related beliefs about herbal medicines need to be tested through research. In the present book chapter, the medicinal plants and their application in the treatment of CVDs are summarized. The pharmacological potential of various medicinal herbs against CVD has been also discussed.



Non-Timber Forest Products

Food, Healthcare and Industrial Applications

Book | © 2021

Overview

Editors: [Azamal Husen](#), [Rakesh Kumar Bachheti](#), [Archana Bachheti](#)

- A collection of recent and updated reviews of the multiple roles of NTFPs
- Discusses the forest-based herbs, grasses, climbers, shrubs, and trees used for food, fodder, fuel, beverages, medicine; as well as their several products
- Highlights the NTFPs development and promotion to reduce the destruction of the biodiversity
- Caters to a wide audience including forester, botanist, economic botanist, ecologists, biologists, and forestry sector scientists, experts, and consultants

Bibliographic Information

Book Title

Non-Timber Forest Products

Book Subtitle

Food, Healthcare and Industrial
Applications

Editors

Azamal Husen, Rakesh Kumar
Bachheti, Archana Bachheti

DOI

<https://doi.org/10.1007/978-3-030-73077-2>

Publisher

Springer Cham

eBook Packages

Biomedical and Life Sciences,
Biomedical and Life Sciences
(RO)

Copyright Information

The Editor(s) (if applicable) and
The Author(s), under exclusive
license to Springer Nature
Switzerland AG 2021

Hardcover ISBN

978-3-030-73076-5
Published: 31 July 2021

Softcover ISBN

978-3-030-73079-6
Published: 31 July 2022

eBook ISBN

978-3-030-73077-2
Published: 30 July 2021

Edition Number

1

Number of Pages

XVII, 473

Table of contents (18 chapters)

Front Matter

[Download chapter PDF](#) 

Pages i–xviii

Potential Role of Forest-Based Plants in Essential Oil Production: An Approach to Cosmetic and Personal Health Care Applications

Limenew Abate, Archana Bachheti, Rakesh Kumar Bachheti, Azamal Husen, Mesfin Getachew, D. P. Pandey
Pages 1–18

Aromatic Oils from Forest and Their Application

Sandra Gonçalves, Anabela Romano
Pages 19–37

Role of Traditional Chewing Sticks in Oral Hygiene and Other Benefits

Fekade Beshah, Yilma Hunde, Mesfin Getachew, Rakesh Kumar Bachheti, Azamal Husen, Archana Bachheti
Pages 39–73

Plant-Based Sweeteners and Their Applications in Modern Lifestyle

Sandeep Kumar, Pankaj Kumar Tyagi, Deepak Gola, Ankit Kumar Mishra, Arvind Arya
Pages 75–103

Nutritional, Pharmaceutical, and Industrial Potential of Forest-Based Plant Gum

Md. Adnan, Ki Kwang Oh, Dong Ha Cho, Madhusudhan Alle
Pages 105–128

Commercial, Cosmetic, and Medicinal Importance of Sandal (*Santalum album*): A Valuable Forest Resource

Salman Khan, Mohsin Ikram, Mohammad Faisal
Pages 129–144

Forest-Based Edible Seeds and Nuts for Health Care and Disease Control

Yakob Godebo Godeto, Archana Bachheti, Azamal Husen, D. P. Pandey, Rakesh Kumar Bachheti
Pages 145–174

Medicinal Plants of Himalayan Forests

Sakshi Painuli, Prabhakar Semwal, Natália Cruz-Martins, Rakesh Kumar Bachheti
Pages 175–212

Forest-Based Medicinal Plants for Cardiovascular Diseases

Arvind Arya, Sandeep Kumar, Pankaj Kumar Tyagi, Deepak Gola, Ankit Kumar Mishra
Pages 213–227

Potential Role of Medicinal Plants in the Cure of Liver and Kidney Diseases

Shakeelur Rahman, Azamal Husen

Pages 229–254

Forest-Based Medicinal Plants for Cancer Cure

Anamika Rana, Jigisha Anand, Manjusha Tyagi, Nishant Rai

Pages 255–280

Health Benefit, Traditional, and Modern Uses of Natural Honey

Swati Sachdev, Anil Kumar, Mohammad Israil Ansari

Pages 281–299

Spices Obtained from Forest and Other Resources

Adita Mishra, Shraddha Rawat, Ved Prakash Singh, Shweta Gautam, Gulab Singh

Pages 301–323

***Ganoderma lucidum*: King of Mushroom**

Mustafa Nadhim Owaid

Pages 325–337

Health-Promoting Benefits, Value-Added Products, and Other Uses of Banana

Abrha Mengstu, Archana Bachheti, Limenew Abate, Rakesh Kumar Bachheti, Azamal Husen
Pages 339–364

Forest-based Plants in Beautification and Their Medicinal Significance

Manu Pant, Priyanka Thakur
Pages 365–381

Food, Fodder and Fuelwoods from Forest

Sugam Gupta, Devvret Verma, Neema Tufchi, Anshul Kamboj, Archana Bachheti, Rakesh Kumar Bachheti et al.
Pages 383–425

Fiber from Forest and Their Importance in Modern Time

Surendra Pratap Singh
Pages 427–453

Back Matter

Pages 455–473


[Download chapter PDF](#) 

SPRINGER NATURE Link

[Find a journal](#)

[Publish with us](#)

[Track your research](#)

 [Search](#)

[Home](#) > [Non-Timber Forest Products](#) > Chapter

Forest-Based Medicinal Plants for Cardiovascular Diseases

Chapter | First Online: 31 July 2021

pp 213–227 | [Cite this chapter](#)

[Arvind Arya](#), [Sandeep Kumar](#), [Pankaj Kumar Tyagi](#), [Deepak Gola](#) & [Ankit Kumar Mishra](#)

Cite this chapter

Arya, A., Kumar, S., Tyagi, P.K., Gola, D., Mishra, A.K. (2021). Forest-Based Medicinal Plants for Cardiovascular Diseases. In: Husen, A., Bachheti, R.K., Bachheti, A. (eds) Non-Timber Forest Products. Springer, Cham. https://doi.org/10.1007/978-3-030-73077-2_9

Download citation

[.RIS](#) [.ENW](#) [.BIB](#)

DOI

https://doi.org/10.1007/978-3-030-73077-2_9

Published

31 July 2021

Publisher Name

Springer, Cham

Print ISBN

978-3-030-73076-5

Online ISBN

978-3-030-73077-2

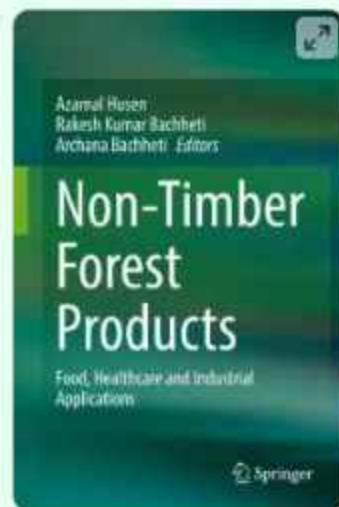
eBook Packages

Biomedical and Life
Sciences

Biomedical and Life
Sciences (R0)

Abstract

Cardiovascular diseases (CVDs) have become a common disease threat worldwide among men and women. CVDs include different pathologies, such as coronary heart disease, congenital heart disease, and cerebrovascular disease. There is historical evidence, which describes the beneficial and preventive effects of vegetables, fruits, and herbs in CVDs. There are several medicines obtained from plants that are being used in the treatment of heart diseases. In comparison to standard modern medicines, herbal preparations are being used due to their cost-effectiveness and a belief that they have comparatively less side effects. However, the safety-related beliefs about herbal medicines need to be tested through research. In the present book chapter, the medicinal plants and their application in the treatment of CVDs are summarized. The pharmacological potential of various medicinal herbs against CVD has been also discussed.



Non-Timber Forest Products

Food, Healthcare and Industrial Applications

Book | © 2021

Overview

Editors: [Azamal Husen](#), [Rakesh Kumar Bachheti](#), [Archana Bachheti](#)

- A collection of recent and updated reviews of the multiple roles of NTFPs
- Discusses the forest-based herbs, grasses, climbers, shrubs, and trees used for food, fodder, fuel, beverages, medicine; as well as their several products
- Highlights the NTFPs development and promotion to reduce the destruction of the biodiversity
- Caters to a wide audience including forester, botanist, economic botanist, ecologists, biologists, and forestry sector scientists, experts, and consultants

Bibliographic Information

Book Title

Non-Timber Forest Products

Book Subtitle

Food, Healthcare and Industrial
Applications

Editors

Azamal Husen, Rakesh Kumar
Bachheti, Archana Bachheti

DOI

<https://doi.org/10.1007/978-3-030-73077-2>

Publisher

Springer Cham

eBook Packages

Biomedical and Life Sciences,
Biomedical and Life Sciences
(R0)

Copyright Information

The Editor(s) (if applicable) and
The Author(s), under exclusive
license to Springer Nature
Switzerland AG 2021

Hardcover ISBN

978-3-030-73076-5
Published: 31 July 2021

Softcover ISBN

978-3-030-73079-6
Published: 31 July 2022

eBook ISBN

978-3-030-73077-2
Published: 30 July 2021

Edition Number

1

Number of Pages

XVII, 473

Table of contents (18 chapters)

Front Matter

[Download chapter PDF](#) 

Pages i–xviii

Potential Role of Forest-Based Plants in Essential Oil Production: An Approach to Cosmetic and Personal Health Care Applications

Limenew Abate, Archana Bachheti, Rakesh Kumar Bachheti, Azamal Husen, Mesfin Getachew, D. P. Pandey
Pages 1–18

Aromatic Oils from Forest and Their Application

Sandra Gonçalves, Anabela Romano
Pages 19–37

Role of Traditional Chewing Sticks in Oral Hygiene and Other Benefits

Fekade Beshah, Yilma Hunde, Mesfin Getachew, Rakesh Kumar Bachheti, Azamal Husen, Archana Bachheti
Pages 39–73

Plant-Based Sweeteners and Their Applications in Modern Lifestyle

Sandeep Kumar, Pankaj Kumar Tyagi, Deepak Gola, Ankit Kumar Mishra, Arvind Arya
Pages 75–103

Nutritional, Pharmaceutical, and Industrial Potential of Forest-Based Plant Gum

Md. Adnan, Ki Kwang Oh, Dong Ha Cho, Madhusudhan Alle
Pages 105–128

Commercial, Cosmetic, and Medicinal Importance of Sandal (*Santalum album*): A Valuable Forest Resource

Salman Khan, Mohsin Ikram, Mohammad Faisal
Pages 129–144

Forest-Based Edible Seeds and Nuts for Health Care and Disease Control

Yakob Godebo Godeto, Archana Bachheti, Azamal Husen, D. P. Pandey, Rakesh Kumar Bachheti
Pages 145–174

Medicinal Plants of Himalayan Forests

Sakshi Painuli, Prabhakar Semwal, Natália Cruz-Martins, Rakesh Kumar Bachheti
Pages 175–212

Forest-Based Medicinal Plants for Cardiovascular Diseases

Arvind Arya, Sandeep Kumar, Pankaj Kumar Tyagi, Deepak Gola, Ankit Kumar Mishra
Pages 213–227

Potential Role of Medicinal Plants in the Cure of Liver and Kidney Diseases

Shakeelur Rahman, Azamal Husen

Pages 229–254

Forest-Based Medicinal Plants for Cancer Cure

Anamika Rana, Jigisha Anand, Manjusha Tyagi, Nishant Rai

Pages 255–280

Health Benefit, Traditional, and Modern Uses of Natural Honey

Swati Sachdev, Anil Kumar, Mohammad Israil Ansari

Pages 281–299

Spices Obtained from Forest and Other Resources

Adita Mishra, Shraddha Rawat, Ved Prakash Singh, Shweta Gautam, Gulab Singh

Pages 301–323

***Ganoderma lucidum*: King of Mushroom**

Mustafa Nadhim Owaid

Pages 325–337

Health-Promoting Benefits, Value-Added Products, and Other Uses of Banana

Abrha Mengstu, Archana Bachheti, Limenew Abate, Rakesh Kumar Bachheti, Azamal Husen
Pages 339–364

Forest-based Plants in Beautification and Their Medicinal Significance

Manu Pant, Priyanka Thakur
Pages 365–381

Food, Fodder and Fuelwoods from Forest

Sugam Gupta, Devvret Verma, Neema Tufchi, Anshul Kamboj, Archana Bachheti, Rakesh Kumar Bachheti et al.
Pages 383–425

Fiber from Forest and Their Importance in Modern Time

Surendra Pratap Singh
Pages 427–453

Back Matter

Pages 455–473

[Download chapter PDF](#) 

SPRINGER NATURE Link

[Find a journal](#)

[Publish with us](#)

[Track your research](#)

 [Search](#)

[Home](#) > [Non-Timber Forest Products](#) > Chapter

Plant-Based Sweeteners and Their Applications in Modern Lifestyle

Chapter | First Online: 31 July 2021

pp 75–103 | [Cite this chapter](#)

[Sandeep Kumar](#), [Pankaj Kumar Tyagi](#), [Deepak Gola](#), [Ankit Kumar Mishra](#) & [Arvind Arya](#)

Cite this chapter

Kumar, S., Tyagi, P.K., Gola, D., Mishra, A.K., Arya, A. (2021). Plant-Based Sweeteners and Their Applications in Modern Lifestyle. In: Husen, A., Bachheti, R.K., Bachheti, A. (eds) Non-Timber Forest Products. Springer, Cham. https://doi.org/10.1007/978-3-030-73077-2_4

Download citation

[.RIS](#) [.ENW](#) [.BIB](#)

DOI

https://doi.org/10.1007/978-3-030-73077-2_4

Published

31 July 2021

Publisher Name

Springer, Cham

Print ISBN

978-3-030-73076-5

Online ISBN

978-3-030-73077-2

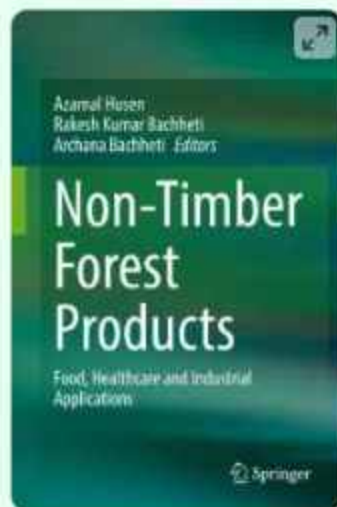
eBook Packages

[Biomedical and Life Sciences](#)

[Biomedical and Life Sciences \(R0\)](#)

Abstract

Among all the basic flavors, sweet flavors are the most desired ones among human beings. The food industries are trying to lure their customers to have more products although it poses potential health hazards to many of their consumers. Obesity, metabolic disorder, and many other diseases increase due to overconsuming sweeteners. Despite all these problems, sugar consumption is constantly increasing. In the recent past, we have witnessed increased cases of diabetes, obesity, dental problems, and many others. The one reason for all these incidences is the overconsumption of sugar/sweeteners. Therefore, the demand for sugar substitutes and, moreover, natural sweeteners has arisen. Sugar is now an unavoidable food ingredient that the consumers are most concerned about. Therefore, they are looking for a more healthy and natural way to sweeten their tongue. This has led to the study of the best natural sweeteners. There are many plant-derived as well as artificial sweeteners available in the market. This chapter sought to enlist natural sweeteners of nutritive and non-nutritive types. A comparative is also shown for intense sweeteners. The traditional and modern-day sweeteners have some health-related issues, which have also been delivered here.



Non-Timber Forest Products

Food, Healthcare and Industrial Applications

Book | © 2021

Overview

Editors: [Azamal Husen](#), [Rakesh Kumar Bachheti](#), [Archana Bachheti](#)

- A collection of recent and updated reviews of the multiple roles of NTFPs
- Discusses the forest-based herbs, grasses, climbers, shrubs, and trees used for food, fodder, fuel, beverages, medicine; as well as their several products
- Highlights the NTFPs development and promotion to reduce the destruction of the biodiversity
- Caters to a wide audience including forester, botanist, economic botanist, ecologists, biologists, and forestry sector scientists, experts, and consultants

Bibliographic Information

Book Title

Non-Timber Forest Products

Book Subtitle

Food, Healthcare and Industrial
Applications

Editors

Azamal Husen, Rakesh Kumar
Bachheti, Archana Bachheti

DOI

<https://doi.org/10.1007/978-3-030-73077-2>

Publisher

Springer Cham

eBook Packages

Biomedical and Life Sciences,
Biomedical and Life Sciences
(R0)

Copyright Information

The Editor(s) (if applicable) and
The Author(s), under exclusive
license to Springer Nature
Switzerland AG 2021

Hardcover ISBN

978-3-030-73076-5
Published: 31 July 2021

Softcover ISBN

978-3-030-73079-6
Published: 31 July 2022

eBook ISBN

978-3-030-73077-2
Published: 30 July 2021

Edition Number

1

Number of Pages

XVII, 473

Table of contents (18 chapters)

Front Matter

[Download chapter PDF](#) 

Pages i–xviii

Potential Role of Forest-Based Plants in Essential Oil Production: An Approach to Cosmetic and Personal Health Care Applications

Limenew Abate, Archana Bachheti, Rakesh Kumar Bachheti, Azamal Husen, Mesfin Getachew, D. P. Pandey
Pages 1–18

Aromatic Oils from Forest and Their Application

Sandra Gonçalves, Anabela Romano
Pages 19–37

Role of Traditional Chewing Sticks in Oral Hygiene and Other Benefits

Fekade Beshah, Yilma Hunde, Mesfin Getachew, Rakesh Kumar Bachheti, Azamal Husen, Archana Bachheti
Pages 39–73

Plant-Based Sweeteners and Their Applications in Modern Lifestyle

Sandeep Kumar, Pankaj Kumar Tyagi, Deepak Gola, Ankit Kumar Mishra, Arvind Arya
Pages 75–103

Nutritional, Pharmaceutical, and Industrial Potential of Forest-Based Plant Gum

Md. Adnan, Ki Kwang Oh, Dong Ha Cho, Madhusudhan Alle
Pages 105–128

Commercial, Cosmetic, and Medicinal Importance of Sandal (*Santalum album*): A Valuable Forest Resource

Salman Khan, Mohsin Ikram, Mohammad Faisal
Pages 129–144

Forest-Based Edible Seeds and Nuts for Health Care and Disease Control

Yakob Godebo Godeto, Archana Bachheti, Azamal Husen, D. P. Pandey, Rakesh Kumar Bachheti
Pages 145–174

Medicinal Plants of Himalayan Forests

Sakshi Painuli, Prabhakar Semwal, Natália Cruz-Martins, Rakesh Kumar Bachheti
Pages 175–212

Forest-Based Medicinal Plants for Cardiovascular Diseases

Arvind Arya, Sandeep Kumar, Pankaj Kumar Tyagi, Deepak Gola, Ankit Kumar Mishra
Pages 213–227

Potential Role of Medicinal Plants in the Cure of Liver and Kidney Diseases

Shakeelur Rahman, Azamal Husen

Pages 229–254

Forest-Based Medicinal Plants for Cancer Cure

Anamika Rana, Jigisha Anand, Manjusha Tyagi, Nishant Rai

Pages 255–280

Health Benefit, Traditional, and Modern Uses of Natural Honey

Swati Sachdev, Anil Kumar, Mohammad Israil Ansari

Pages 281–299

Spices Obtained from Forest and Other Resources

Adita Mishra, Shraddha Rawat, Ved Prakash Singh, Shweta Gautam, Gulab Singh

Pages 301–323

***Ganoderma lucidum*: King of Mushroom**

Mustafa Nadhim Owaid

Pages 325–337

Health-Promoting Benefits, Value-Added Products, and Other Uses of Banana

Abrha Mengstu, Archana Bachheti, Limenew Abate, Rakesh Kumar Bachheti, Azamal Husen
Pages 339–364

Forest-based Plants in Beautification and Their Medicinal Significance

Manu Pant, Priyanka Thakur
Pages 365–381

Food, Fodder and Fuelwoods from Forest

Sugam Gupta, Devvret Verma, Neema Tufchi, Anshul Kamboj, Archana Bachheti, Rakesh Kumar Bachheti et al.
Pages 383–425

Fiber from Forest and Their Importance in Modern Time

Surendra Pratap Singh
Pages 427–453

Back Matter

Pages 455–473

[Download chapter PDF](#) 

SPRINGER NATURE Link

[Find a journal](#)

[Publish with us](#)

[Track your research](#)

 [Search](#)

[Home](#) > [Non-Timber Forest Products](#) > Chapter

Plant-Based Sweeteners and Their Applications in Modern Lifestyle

Chapter | First Online: 31 July 2021

pp 75–103 | [Cite this chapter](#)

[Sandeep Kumar](#), [Pankaj Kumar Tyagi](#), [Deepak Gola](#), [Ankit Kumar Mishra](#) & [Arvind Arya](#)

Cite this chapter

Kumar, S., Tyagi, P.K., Gola, D., Mishra, A.K., Arya, A. (2021). Plant-Based Sweeteners and Their Applications in Modern Lifestyle. In: Husen, A., Bachheti, R.K., Bachheti, A. (eds) Non-Timber Forest Products. Springer, Cham. https://doi.org/10.1007/978-3-030-73077-2_4

Download citation

[.RIS](#) [.ENW](#) [.BIB](#)

DOI

https://doi.org/10.1007/978-3-030-73077-2_4

Published

31 July 2021

Publisher Name

Springer, Cham

Print ISBN

978-3-030-73076-5

Online ISBN

978-3-030-73077-2

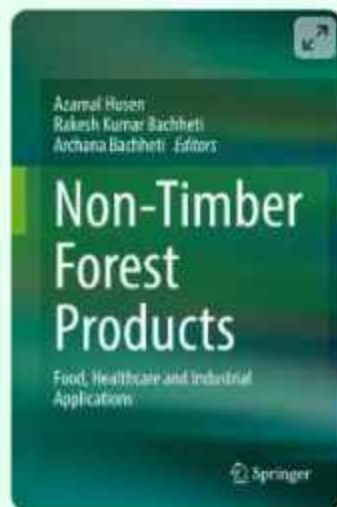
eBook Packages

[Biomedical and Life Sciences](#)

[Biomedical and Life Sciences \(R0\)](#)

Abstract

Among all the basic flavors, sweet flavors are the most desired ones among human beings. The food industries are trying to lure their customers to have more products although it poses potential health hazards to many of their consumers. Obesity, metabolic disorder, and many other diseases increase due to overconsuming sweeteners. Despite all these problems, sugar consumption is constantly increasing. In the recent past, we have witnessed increased cases of diabetes, obesity, dental problems, and many others. The one reason for all these incidences is the overconsumption of sugar/sweeteners. Therefore, the demand for sugar substitutes and, moreover, natural sweeteners has arisen. Sugar is now an unavoidable food ingredient that the consumers are most concerned about. Therefore, they are looking for a more healthy and natural way to sweeten their tongue. This has led to the study of the best natural sweeteners. There are many plant-derived as well as artificial sweeteners available in the market. This chapter sought to enlist natural sweeteners of nutritive and non-nutritive types. A comparative is also shown for intense sweeteners. The traditional and modern-day sweeteners have some health-related issues, which have also been delivered here.



Non-Timber Forest Products

Food, Healthcare and Industrial Applications

Book | © 2021

Overview

Editors: [Azamal Husen](#), [Rakesh Kumar Bachheti](#), [Archana Bachheti](#)

- A collection of recent and updated reviews of the multiple roles of NTFPs
- Discusses the forest-based herbs, grasses, climbers, shrubs, and trees used for food, fodder, fuel, beverages, medicine; as well as their several products
- Highlights the NTFPs development and promotion to reduce the destruction of the biodiversity
- Caters to a wide audience including forester, botanist, economic botanist, ecologists, biologists, and forestry sector scientists, experts, and consultants

Bibliographic Information

Book Title

Non-Timber Forest Products

Book Subtitle

Food, Healthcare and Industrial
Applications

Editors

Azamal Husen, Rakesh Kumar
Bachheti, Archana Bachheti

DOI

<https://doi.org/10.1007/978-3-030-73077-2>

Publisher

Springer Cham

eBook Packages

Biomedical and Life Sciences,
Biomedical and Life Sciences
(R0)

Copyright Information

The Editor(s) (if applicable) and
The Author(s), under exclusive
license to Springer Nature
Switzerland AG 2021

Hardcover ISBN

978-3-030-73076-5
Published: 31 July 2021

Softcover ISBN

978-3-030-73079-6
Published: 31 July 2022

eBook ISBN

978-3-030-73077-2
Published: 30 July 2021

Edition Number

1

Number of Pages

XVII, 473

Table of contents (18 chapters)

Front Matter

[Download chapter PDF](#) 

Pages i–xviii

Potential Role of Forest-Based Plants in Essential Oil Production: An Approach to Cosmetic and Personal Health Care Applications

Limenew Abate, Archana Bachheti, Rakesh Kumar Bachheti, Azamal Husen, Mesfin Getachew, D. P. Pandey
Pages 1–18

Aromatic Oils from Forest and Their Application

Sandra Gonçalves, Anabela Romano
Pages 19–37

Role of Traditional Chewing Sticks in Oral Hygiene and Other Benefits

Fekade Beshah, Yilma Hunde, Mesfin Getachew, Rakesh Kumar Bachheti, Azamal Husen, Archana Bachheti
Pages 39–73

Plant-Based Sweeteners and Their Applications in Modern Lifestyle

Sandeep Kumar, Pankaj Kumar Tyagi, Deepak Gola, Ankit Kumar Mishra, Arvind Arya
Pages 75–103

Nutritional, Pharmaceutical, and Industrial Potential of Forest-Based Plant Gum

Md. Adnan, Ki Kwang Oh, Dong Ha Cho, Madhusudhan Alle
Pages 105–128

Commercial, Cosmetic, and Medicinal Importance of Sandal (*Santalum album*): A Valuable Forest Resource

Salman Khan, Mohsin Ikram, Mohammad Faisal
Pages 129–144

Forest-Based Edible Seeds and Nuts for Health Care and Disease Control

Yakob Godebo Godeto, Archana Bachheti, Azamal Husen, D. P. Pandey, Rakesh Kumar Bachheti
Pages 145–174

Medicinal Plants of Himalayan Forests

Sakshi Painuli, Prabhakar Semwal, Natália Cruz-Martins, Rakesh Kumar Bachheti
Pages 175–212

Forest-Based Medicinal Plants for Cardiovascular Diseases

Arvind Arya, Sandeep Kumar, Pankaj Kumar Tyagi, Deepak Gola, Ankit Kumar Mishra
Pages 213–227

Potential Role of Medicinal Plants in the Cure of Liver and Kidney Diseases

Shakeelur Rahman, Azamal Husen

Pages 229–254

Forest-Based Medicinal Plants for Cancer Cure

Anamika Rana, Jigisha Anand, Manjusha Tyagi, Nishant Rai

Pages 255–280

Health Benefit, Traditional, and Modern Uses of Natural Honey

Swati Sachdev, Anil Kumar, Mohammad Israil Ansari

Pages 281–299

Spices Obtained from Forest and Other Resources

Adita Mishra, Shraddha Rawat, Ved Prakash Singh, Shweta Gautam, Gulab Singh

Pages 301–323

***Ganoderma lucidum*: King of Mushroom**

Mustafa Nadhim Owaid

Pages 325–337

Health-Promoting Benefits, Value-Added Products, and Other Uses of Banana

Abrha Mengstu, Archana Bachheti, Limenew Abate, Rakesh Kumar Bachheti, Azamal Husen
Pages 339–364

Forest-based Plants in Beautification and Their Medicinal Significance

Manu Pant, Priyanka Thakur
Pages 365–381

Food, Fodder and Fuelwoods from Forest

Sugam Gupta, Devvret Verma, Neema Tufchi, Anshul Kamboj, Archana Bachheti, Rakesh Kumar Bachheti et al.
Pages 383–425

Fiber from Forest and Their Importance in Modern Time

Surendra Pratap Singh
Pages 427–453

Back Matter

Pages 455–473

[Download chapter PDF](#) 

SPRINGER NATURE Link

[Find a journal](#)

[Publish with us](#)

[Track your research](#)

 [Search](#)

[Home](#) > [Non-Timber Forest Products](#) > Chapter

Plant-Based Sweeteners and Their Applications in Modern Lifestyle

Chapter | First Online: 31 July 2021

pp 75–103 | [Cite this chapter](#)

[Sandeep Kumar](#), [Pankaj Kumar Tyagi](#), [Deepak Gola](#), [Ankit Kumar Mishra](#) & [Arvind Arya](#)

Cite this chapter

Kumar, S., Tyagi, P.K., Gola, D., Mishra, A.K., Arya, A. (2021). Plant-Based Sweeteners and Their Applications in Modern Lifestyle. In: Husen, A., Bachheti, R.K., Bachheti, A. (eds) Non-Timber Forest Products. Springer, Cham. https://doi.org/10.1007/978-3-030-73077-2_4

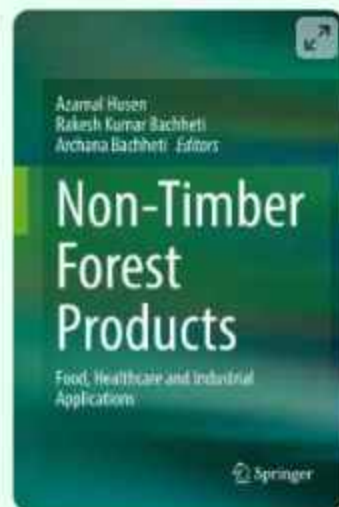
Download citation

[.RIS](#) [.ENW](#) [.BIB](#)

DOI	Published	Publisher Name
https://doi.org/10.1007/978-3-030-73077-2_4	31 July 2021	Springer, Cham
Print ISBN	Online ISBN	eBook Packages
978-3-030-73076-5	978-3-030-73077-2	Biomedical and Life Sciences
		Biomedical and Life Sciences (R0)

Abstract

Among all the basic flavors, sweet flavors are the most desired ones among human beings. The food industries are trying to lure their customers to have more products although it poses potential health hazards to many of their consumers. Obesity, metabolic disorder, and many other diseases increase due to overconsuming sweeteners. Despite all these problems, sugar consumption is constantly increasing. In the recent past, we have witnessed increased cases of diabetes, obesity, dental problems, and many others. The one reason for all these incidences is the overconsumption of sugar/sweeteners. Therefore, the demand for sugar substitutes and, moreover, natural sweeteners has arisen. Sugar is now an unavoidable food ingredient that the consumers are most concerned about. Therefore, they are looking for a more healthy and natural way to sweeten their tongue. This has led to the study of the best natural sweeteners. There are many plant-derived as well as artificial sweeteners available in the market. This chapter sought to enlist natural sweeteners of nutritive and non-nutritive types. A comparative is also shown for intense sweeteners. The traditional and modern-day sweeteners have some health-related issues, which have also been delivered here.



Non-Timber Forest Products

Food, Healthcare and Industrial Applications

Book | © 2021

Overview

Editors: [Azamal Husen](#), [Rakesh Kumar Bachheti](#), [Archana Bachheti](#)

- A collection of recent and updated reviews of the multiple roles of NTFPs
- Discusses the forest-based herbs, grasses, climbers, shrubs, and trees used for food, fodder, fuel, beverages, medicine; as well as their several products
- Highlights the NTFPs development and promotion to reduce the destruction of the biodiversity
- Caters to a wide audience including forester, botanist, economic botanist, ecologists, biologists, and forestry sector scientists, experts, and consultants

Bibliographic Information

Book Title

Non-Timber Forest Products

Book Subtitle

Food, Healthcare and Industrial
Applications

Editors

Azamal Husen, Rakesh Kumar
Bachheti, Archana Bachheti

DOI

<https://doi.org/10.1007/978-3-030-73077-2>

Publisher

Springer Cham

eBook Packages

Biomedical and Life Sciences,
Biomedical and Life Sciences
(R0)

Copyright Information

The Editor(s) (if applicable) and
The Author(s), under exclusive
license to Springer Nature
Switzerland AG 2021

Hardcover ISBN

978-3-030-73076-5
Published: 31 July 2021

Softcover ISBN

978-3-030-73079-6
Published: 31 July 2022

eBook ISBN

978-3-030-73077-2
Published: 30 July 2021

Edition Number

1

Number of Pages

XVII, 473

Table of contents (18 chapters)

Front Matter

[Download chapter PDF](#) 

Pages i–xviii

Potential Role of Forest-Based Plants in Essential Oil Production: An Approach to Cosmetic and Personal Health Care Applications

Limenew Abate, Archana Bachheti, Rakesh Kumar Bachheti, Azamal Husen, Mesfin Getachew, D. P. Pandey
Pages 1–18

Aromatic Oils from Forest and Their Application

Sandra Gonçalves, Anabela Romano
Pages 19–37

Role of Traditional Chewing Sticks in Oral Hygiene and Other Benefits

Fekade Beshah, Yilma Hunde, Mesfin Getachew, Rakesh Kumar Bachheti, Azamal Husen, Archana Bachheti
Pages 39–73

Plant-Based Sweeteners and Their Applications in Modern Lifestyle

Sandeep Kumar, Pankaj Kumar Tyagi, Deepak Gola, Ankit Kumar Mishra, Arvind Arya
Pages 75–103

Nutritional, Pharmaceutical, and Industrial Potential of Forest-Based Plant Gum

Md. Adnan, Ki Kwang Oh, Dong Ha Cho, Madhusudhan Alle
Pages 105–128

Commercial, Cosmetic, and Medicinal Importance of Sandal (*Santalum album*): A Valuable Forest Resource

Salman Khan, Mohsin Ikram, Mohammad Faisal
Pages 129–144

Forest-Based Edible Seeds and Nuts for Health Care and Disease Control

Yakob Godebo Godeto, Archana Bachheti, Azamal Husen, D. P. Pandey, Rakesh Kumar Bachheti
Pages 145–174

Medicinal Plants of Himalayan Forests

Sakshi Painuli, Prabhakar Semwal, Natália Cruz-Martins, Rakesh Kumar Bachheti
Pages 175–212

Forest-Based Medicinal Plants for Cardiovascular Diseases

Arvind Arya, Sandeep Kumar, Pankaj Kumar Tyagi, Deepak Gola, Ankit Kumar Mishra
Pages 213–227

Potential Role of Medicinal Plants in the Cure of Liver and Kidney Diseases

Shakeelur Rahman, Azamal Husen

Pages 229–254

Forest-Based Medicinal Plants for Cancer Cure

Anamika Rana, Jigisha Anand, Manjusha Tyagi, Nishant Rai

Pages 255–280

Health Benefit, Traditional, and Modern Uses of Natural Honey

Swati Sachdev, Anil Kumar, Mohammad Israil Ansari

Pages 281–299

Spices Obtained from Forest and Other Resources

Adita Mishra, Shraddha Rawat, Ved Prakash Singh, Shweta Gautam, Gulab Singh

Pages 301–323

***Ganoderma lucidum*: King of Mushroom**

Mustafa Nadhim Owaid

Pages 325–337

Health-Promoting Benefits, Value-Added Products, and Other Uses of Banana

Abrha Mengstu, Archana Bachheti, Limenew Abate, Rakesh Kumar Bachheti, Azamal Husen
Pages 339–364

Forest-based Plants in Beautification and Their Medicinal Significance

Manu Pant, Priyanka Thakur
Pages 365–381

Food, Fodder and Fuelwoods from Forest

Sugam Gupta, Devvret Verma, Neema Tufchi, Anshul Kamboj, Archana Bachheti, Rakesh Kumar Bachheti et al.
Pages 383–425

Fiber from Forest and Their Importance in Modern Time

Surendra Pratap Singh
Pages 427–453

Back Matter

Pages 455–473

[Download chapter PDF](#) 

SPRINGER NATURE Link

[Find a journal](#)

[Publish with us](#)

[Track your research](#)

 [Search](#)

[Home](#) > [Non-Timber Forest Products](#) > Chapter

Plant-Based Sweeteners and Their Applications in Modern Lifestyle

Chapter | First Online: 31 July 2021

pp 75–103 | [Cite this chapter](#)

[Sandeep Kumar](#), [Pankaj Kumar Tyagi](#), [Deepak Gola](#), [Ankit Kumar Mishra](#) & [Arvind Arya](#)

Cite this chapter

Kumar, S., Tyagi, P.K., Gola, D., Mishra, A.K., Arya, A. (2021). Plant-Based Sweeteners and Their Applications in Modern Lifestyle. In: Husen, A., Bachheti, R.K., Bachheti, A. (eds) Non-Timber Forest Products. Springer, Cham. https://doi.org/10.1007/978-3-030-73077-2_4

Download citation

[.RIS](#) [.ENW](#) [.BIB](#)

DOI

https://doi.org/10.1007/978-3-030-73077-2_4

Published

31 July 2021

Publisher Name

Springer, Cham

Print ISBN

978-3-030-73076-5

Online ISBN

978-3-030-73077-2

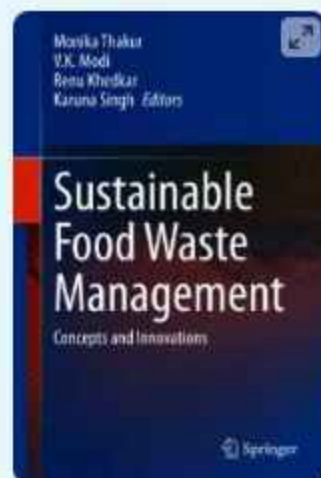
eBook Packages

[Biomedical and Life Sciences](#)

[Biomedical and Life Sciences \(R0\)](#)

Abstract

Among all the basic flavors, sweet flavors are the most desired ones among human beings. The food industries are trying to lure their customers to have more products although it poses potential health hazards to many of their consumers. Obesity, metabolic disorder, and many other diseases increase due to overconsuming sweeteners. Despite all these problems, sugar consumption is constantly increasing. In the recent past, we have witnessed increased cases of diabetes, obesity, dental problems, and many others. The one reason for all these incidences is the overconsumption of sugar/sweeteners. Therefore, the demand for sugar substitutes and, moreover, natural sweeteners has arisen. Sugar is now an unavoidable food ingredient that the consumers are most concerned about. Therefore, they are looking for a more healthy and natural way to sweeten their tongue. This has led to the study of the best natural sweeteners. There are many plant-derived as well as artificial sweeteners available in the market. This chapter sought to enlist natural sweeteners of nutritive and non-nutritive types. A comparative is also shown for intense sweeteners. The traditional and modern-day sweeteners have some health-related issues, which have also been delivered here.



Sustainable Food Waste Management

Concepts and Innovations

Book | © 2020

Overview

Editors: [Monika Thakur](#), [V. K. Modi](#), [Renu Khedkar](#), [Karuna Singh](#)

- Discusses important regulations and standards for waste management in food industry
- Provides the latest information about the various food industry by-products and their proper utilization for health and environment
- Describes important waste management approaches that help in recovery of important, bio-active molecules from food wastes

Table of contents (22 chapters)

Front Matter

[Download chapter PDF](#) 

Pages i–xxxiii

Food Industry Waste: Introduction, Standards and Management

Front Matter

[Download chapter PDF](#) 

Pages 1–1

Sustainable Food Waste Management: A Review

Karuna Singh

Pages 3–19

Environmental Standards & Regulations for Waste Management in Food Industries

A. Poovazhahi, Monika Thakur

Pages 21–39

Characterization and Treatment of Waste from Food Processing Industries

Manish Kaushik, Dipti Sharma

Pages 41–58

Advances in Wastewater Treatment in Food Processing Industries: Sustainable Approach

Ankit Paliwal
Pages 59–71

Utilization of Waste from Food Processing Industries

Front Matter

[Download chapter PDF](#) 

Pages 73–73

Fruits and Vegetable By-Product Utilization as a Novel Approach for Value Addition

Maysam Sarafrazy, Urba Shafiq Sidiqi
Pages 75–86

Phytochemicals from the Fruits and Vegetable Waste: Holistic and Sustainable Approach

Alok Mishra, Amrita Poonia
Pages 87–112

Fruit Peels: A Sustainable Agro Waste Utilization Approach

Simple Kumar, Girish N. Mathad, Rongsenyangla Ozukum
Pages 113–125

Waste from Dairy Processing Industries and its Sustainable Utilization

Falguni Patra, Raj Kumar Duary
Pages 127-154

Potential Value Addition from Cereal and Pulse Processed By-Products: A Review

Renu Yadav, Neelam Yadav, Pinki Saini, Devinder Kaur, Rajendra Kumar
Pages 155-176

Waste from Oil-Seed Industry: A Sustainable Approach

Suka Thangaraju, Manoj Kumar Pulivarthi, Venkatachalapathy Natarajan
Pages 177-190

Wealth from Meat Industry By-Products and Waste: A Review

Rukhsaar Sayeed, Pratibha Tiwari
Pages 191-208

Post-Harvest Management of Climacteric Fruits in India: The Promising Road Map for Future

Komal Mathur, Parul Chugh
Pages 209-226

Agricultural Waste Produce: Utilization and Management

Deepshikha Thakur, Naleeni Ramawat, Vineet Shyam
Pages 227–240

Biobased Packaging from Food Industry Waste

Anila Zahid, Renu Khedkar
Pages 241–265

Emerging Opportunities for Effective Valorization of Dairy By-Products

Amrita Poonia
Pages 267–287

Advances in Sugarcane Industry: By-Product Valorization

Narendra Mohan, Anushka Agarwal
Pages 289–304

Sustainable Food Waste Management Technologies

Front Matter

Pages 305–305

[Download chapter PDF](#) 

[Home](#) > [Sustainable Food Waste Management](#) > Chapter

Characterization and Treatment of Waste from Food Processing Industries

Chapter | First Online: 05 January 2021

pp 41–58 | [Cite this chapter](#)



[Sustainable Food Waste Management](#)

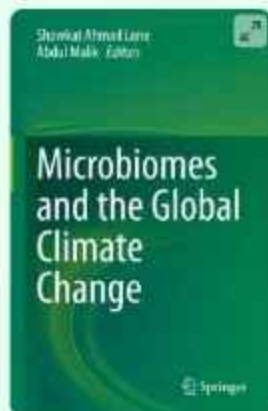
[Manish Kaushik](#) & [Dipti Sharma](#)

[Access this chapter](#)

Abstract

Food waste is complex which consists of both liquid and solid waste. Solid waste from food processing units includes both organic waste and packaging waste. The food processing sector includes milk and milk products, fruits, vegetables and juices, grain and flour processing, poultry and meat, alcoholic beverages, fisheries, and many consumer-predicated products like chocolates, coffee, tea, confectionaries, soya-based products, mineral water, soft-drink, etc. Food waste from each type of food industry has specific characteristic and hence need treatments, e.g., aerobic and anaerobic lagoons, vermicomposting accordingly. Along with this the use of food waste could significantly reduce food waste levels and create new opportunities and benefits for all those involved in the food production system. Reducing food waste through the recovery of its valuable components is therefore an important way to increase sustainability. The need for a sustainable approach can no longer be overlooked by food production companies and other stakeholders of food production system. Sustainable food waste management system is the only way to reduce the developed waste.

[Home](#) > [Book](#)



Microbiomes and the Global Climate Change

Book | © 2021

Overview

Editors: [Showkat Ahmad Lone](#), [Abdul Malik](#)

- Provides unique perspectives on the role of planetary microbiomes in climate change and the impact of climate change on microorganisms including pathogens
- Describes approaches of utilizing microbiota in bio-remediation and sustainable environment
- Discusses the importance of methanotrophs and methanogens in sustainable agriculture

Acce

Log in via

[eBook](#)

Bibliographic Information

Book Title

Microbiomes and the Global
Climate Change

Editors

Showkat Ahmad Lone, Abdul
Malik

DOI

<https://doi.org/10.1007/978-981-33-4508-9>

Publisher

Springer Singapore

eBook Packages

Biomedical and Life Sciences,
Biomedical and Life Sciences
(R0)

Copyright Information

Springer Nature Singapore Pte
Ltd. 2021

Hardcover ISBN

978-981-33-4507-2
Published: 03 July 2021

Softcover ISBN

978-981-33-4510-2
Published: 04 July 2022

eBook ISBN

978-981-33-4508-9
Published: 02 July 2021

Edition Number

1

Number of Pages

XIII, 374

Number of Illustrations

8 b/w illustrations, 33
illustrations in colour

Table of contents (19 chapters)

Front Matter

[Download chapter PDF](#) 

Pages i–xiii

Climate Change and Microbial Ecology

Front Matter

[Download chapter PDF](#) 

Pages 1–1

Microbes and Climate: A Tangled Relation

Irfan Khan, Fahad Khan, Saghir Ahmad, Pratibha Pandey, Mohammad Mustufa Khan

Pages 3–15

Carbon Sequestration in Aquatic System Using Microbial Pump

Syed Nasir Ahmad, Tanveer Ahmad Mir, Talib Shareef, Sasmita Pattnaik, Showkat Ahmad Lone

Pages 17–29

Climate Change Extenuation by Greenhouse Gas Quenching Microflora

Ruqeya Nazir, Riasa Zaffar

Pages 31–41

Role of Methanotrophs in Mitigating Global Warming

Farhana Masood, Saghir Ahmad, Abdul Malik

Pages 43–60

Paradigm Ecological Shift and Succession in Microbiomes: A Climatic Advent

Avijit Tarafdar, Devashish R. Chobe, Mamta Sharma

Pages 61–79

Exploring the Diversity of Marine Microbiome in Response to Changes in the Environment

Sana Khan, Abdul Malik

Pages 81–92

Polar Microbes as Climate-Resilient Pathways for Mitigation of Climate Change

Shah Ishfaq, Baba Uqab, Jeelani Gousia, Ruqeya Nazir, B. A. Ganai

Pages 93–102

Climate Change and Pathogens

Front Matter

[Download chapter PDF](#) 

Pages 103–103

Climate Change and Population Health

Mariya Amin Qurieshi, Mehbooba Rasool
Pages 105–122

Impact of Climate Change on the Incidence and Transfer of Food- and Water-Borne Diseases

Mohammad Anas, Mohammad Asim Sami, Zarreena Siddiqui, Khalida Khatoon, Mohammad Tarique Zeyad, Abdul Malik
Pages 123–144

Climate Change: Any Dangers from Antimicrobial Resistant Bacteria?

Charles W. Knapp, Ronald Turner, Emmanuel Salifu, Sadia Khan, Mark Stillings, Rebecca Tonner
Pages 145–171

Phyllosphere Microbiome: Plant Defense Strategies

Beenish Saleem
Pages 173–201

Climate Change and Agriculture

Front Matter

Pages 203–203

[Download chapter PDF](#) 

Understanding Methanogens, Methanotrophs, and Methane Emission in Rice Ecosystem

Sandeep K. Malyan, Smita S. Kumar, Ajeet Singh, Om Kumar, Dipak Kumar Gupta, Ajar Nath Yadav et al.
Pages 205–224

Soil Microflora and its Role in Diminution of Global Climate Change

Nilanjana Majumder, Koushik Biswas
Pages 225–246

Role of Microorganisms in Plant Adaptation Towards Climate Change for Sustainable Agriculture

Mohammad Tarique Zeyad, Mahendra Vikram Singh Rajawat, Murugan Kumar, Abdul Malik, Mohammad Anas, Waquar Akhter Ansari et al.
Pages 247–266

Novel Approaches for Genome Editing to Develop Climate Smart Crops

Reena Yadav, Radhakrishnan Thankappan, Abhay Kumar
Pages 267–291

Climate Change and the Environmental Microbiology

[Find a journal](#)

[Publish with us](#)

[Track your research](#)

 [Search](#)

[Home](#) > [Microbiomes and the Global Climate Change](#) > Chapter

Microbes and Climate: A Tangled Relation

Chapter | First Online: 03 July 2021

pp 3–15 | [Cite this chapter](#)

[Irfan Khan](#), [Fahad Khan](#), [Saghir Ahmad](#), [Pratibha Pandey](#) & [Mohammad Mustufa Khan](#)

About this chapter



Check for
updates

Cite this chapter

Khan, I., Khan, F., Ahmad, S., Pandey, P., Khan, M.M. (2021). Microbes and Climate: A Tangled Relation. In: Lone, S.A., Malik, A. (eds) Microbiomes and the Global Climate Change. Springer, Singapore. https://doi.org/10.1007/978-981-33-4508-9_1

Download citation

[.RIS↓](#) [.ENW↓](#) [.BIB↓](#)

DOI

https://doi.org/10.1007/978-981-33-4508-9_1

Published

03 July 2021

Publisher Name

Springer, Singapore

Print ISBN

978-981-33-4507-2

Online ISBN

978-981-33-4508-9

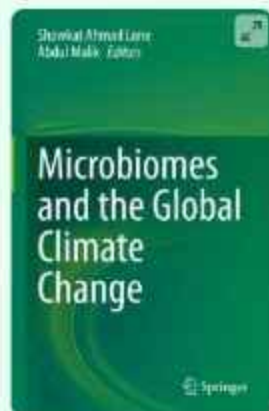
eBook Packages

[Biomedical and Life Sciences](#)
[Biomedical and Life Sciences \(R0\)](#)

Abstract

In the present scenario, the undesirable changes in the climatic conditions impact different components of ecosystem such as microbes, plants, animals, soil, etc. In this chapter, an effort has been made to summarize the relation between microbes and climate and their impact on each other. There are very few relationships that could be as complex as that of microorganisms and climate. More recent evidence has attempted to explain the role of microorganisms in regulating the fluxes of greenhouse gases such as carbon dioxide, methane, and nitrous oxide. Microbes play an integral role in modulating the cycles of various elements such as carbon, nitrogen, and oxygen. They directly as well as indirectly influence the release of greenhouse gases into the environment as well as the consumption of these gases from the atmosphere. As such, the application of utilizing these microbes for mitigating climate change has started receiving greater attention. This chapter enumerates the various beneficial microbes and their individual role in amelioration of the damage to the climate, laying emphasis on the potential to exploit these microbes as a technique for remedying the adverse climatic conditions.

[Home](#) > [Book](#)



Microbiomes and the Global Climate Change

Book | © 2021

Overview

Editors: [Showkat Ahmad Lone](#), [Abdul Malik](#)

- Provides unique perspectives on the role of planetary microbiomes in climate change and the impact of climate change on microorganisms including pathogens
- Describes approaches of utilizing microbiota in bio-remediation and sustainable environment
- Discusses the importance of methanotrophs and methanogens in sustainable agriculture

Acce

Log in via

[eBook](#)

Bibliographic Information

Book Title

Microbiomes and the Global
Climate Change

Editors

Showkat Ahmad Lone, Abdul
Malik

DOI

<https://doi.org/10.1007/978-981-33-4508-9>

Publisher

Springer Singapore

eBook Packages

Biomedical and Life Sciences,
Biomedical and Life Sciences
(R0)

Copyright Information

Springer Nature Singapore Pte
Ltd. 2021

Hardcover ISBN

978-981-33-4507-2
Published: 03 July 2021

Softcover ISBN

978-981-33-4510-2
Published: 04 July 2022

eBook ISBN

978-981-33-4508-9
Published: 02 July 2021

Edition Number

1

Number of Pages

XIII, 374

Number of Illustrations

8 b/w illustrations, 33
illustrations in colour

Table of contents (19 chapters)

Front Matter

[Download chapter PDF](#) 

Pages i–xiii

Climate Change and Microbial Ecology

Front Matter

[Download chapter PDF](#) 

Pages 1–1

Microbes and Climate: A Tangled Relation

Irfan Khan, Fahad Khan, Saghir Ahmad, Pratibha Pandey, Mohammad Mustufa Khan

Pages 3–15

Carbon Sequestration in Aquatic System Using Microbial Pump

Syed Nasir Ahmad, Tanveer Ahmad Mir, Talib Shareef, Sasmita Pattnaik, Showkat Ahmad Lone

Pages 17–29

Climate Change Extenuation by Greenhouse Gas Quenching Microflora

Ruqeya Nazir, Riasa Zaffar

Pages 31–41

Role of Methanotrophs in Mitigating Global Warming

Farhana Masood, Saghir Ahmad, Abdul Malik

Pages 43–60

Paradigm Ecological Shift and Succession in Microbiomes: A Climatic Advent

Avijit Tarafdar, Devashish R. Chobe, Mamta Sharma

Pages 61–79

Exploring the Diversity of Marine Microbiome in Response to Changes in the Environment

Sana Khan, Abdul Malik

Pages 81–92

Polar Microbes as Climate-Resilient Pathways for Mitigation of Climate Change

Shah Ishfaq, Baba Uqab, Jeelani Gousia, Ruqeya Nazir, B. A. Ganai

Pages 93–102

Climate Change and Pathogens

Front Matter

[Download chapter PDF](#) 

Pages 103–103

Climate Change and Population Health

Mariya Amin Qurieshi, Mehbooba Rasool
Pages 105–122

Impact of Climate Change on the Incidence and Transfer of Food- and Water-Borne Diseases

Mohammad Anas, Mohammad Asim Sami, Zarreena Siddiqui, Khalida Khatoon, Mohammad Tarique Zeyad, Abdul Malik
Pages 123–144

Climate Change: Any Dangers from Antimicrobial Resistant Bacteria?

Charles W. Knapp, Ronald Turner, Emmanuel Salifu, Sadia Khan, Mark Stillings, Rebecca Tonner
Pages 145–171

Phyllosphere Microbiome: Plant Defense Strategies

Beenish Saleem
Pages 173–201

Climate Change and Agriculture

Front Matter

Pages 203–203

[Download chapter PDF](#) 

Understanding Methanogens, Methanotrophs, and Methane Emission in Rice Ecosystem

Sandeep K. Malyan, Smita S. Kumar, Ajeet Singh, Om Kumar, Dipak Kumar Gupta, Ajar Nath Yadav et al.
Pages 205–224

Soil Microflora and its Role in Diminution of Global Climate Change

Nilanjana Majumder, Koushik Biswas
Pages 225–246

Role of Microorganisms in Plant Adaptation Towards Climate Change for Sustainable Agriculture

Mohammad Tarique Zeyad, Mahendra Vikram Singh Rajawat, Murugan Kumar, Abdul Malik, Mohammad Anas, Waquar Akhter Ansari et al.
Pages 247–266

Novel Approaches for Genome Editing to Develop Climate Smart Crops

Reena Yadav, Radhakrishnan Thankappan, Abhay Kumar
Pages 267–291

Climate Change and the Environmental Microbiology

[Find a journal](#)

[Publish with us](#)

[Track your research](#)

 [Search](#)

[Home](#) > [Microbiomes and the Global Climate Change](#) > Chapter

Microbes and Climate: A Tangled Relation

Chapter | First Online: 03 July 2021

pp 3–15 | [Cite this chapter](#)

[Irfan Khan](#), [Fahad Khan](#), [Saghir Ahmad](#), [Pratibha Pandey](#) & [Mohammad Mustufa Khan](#)

About this chapter



Check for
updates

Cite this chapter

Khan, I., Khan, F., Ahmad, S., Pandey, P., Khan, M.M. (2021). Microbes and Climate: A Tangled Relation. In: Lone, S.A., Malik, A. (eds) Microbiomes and the Global Climate Change. Springer, Singapore. https://doi.org/10.1007/978-981-33-4508-9_1

Download citation

[.RIS↓](#) [.ENW↓](#) [.BIB↓](#)

DOI

https://doi.org/10.1007/978-981-33-4508-9_1

Published

03 July 2021

Publisher Name

Springer, Singapore

Print ISBN

978-981-33-4507-2

Online ISBN

978-981-33-4508-9

eBook Packages

[Biomedical and Life Sciences](#)
[Biomedical and Life Sciences \(R0\)](#)

Abstract

In the present scenario, the undesirable changes in the climatic conditions impact different components of ecosystem such as microbes, plants, animals, soil, etc. In this chapter, an effort has been made to summarize the relation between microbes and climate and their impact on each other. There are very few relationships that could be as complex as that of microorganisms and climate. More recent evidence has attempted to explain the role of microorganisms in regulating the fluxes of greenhouse gases such as carbon dioxide, methane, and nitrous oxide. Microbes play an integral role in modulating the cycles of various elements such as carbon, nitrogen, and oxygen. They directly as well as indirectly influence the release of greenhouse gases into the environment as well as the consumption of these gases from the atmosphere. As such, the application of utilizing these microbes for mitigating climate change has started receiving greater attention. This chapter enumerates the various beneficial microbes and their individual role in amelioration of the damage to the climate, laying emphasis on the potential to exploit these microbes as a technique for remedying the adverse climatic conditions.

Maulin P. Shah, PhD
Editor

AN INNOVATIVE APPROACH OF

**ADVANCED
OXIDATION
PROCESSES**

IN WASTEWATER TREATMENT

Environmental Science, Engineering and Technology

An Innovative Approach of Advanced Oxidation Processes in Wastewater Treatment

\$230.00

Maulin P. Shah, PhD

Series: Environmental Science, Engineering and Technology

BISAC: SC1026000

DOI: <https://doi.org/10.52305/DBMP3480>

In recent decades, scientific insight into the chemistry of water has increased enormously, leading to the development of advanced wastewater and water purification technologies. However, the quality of freshwater resources has continually deteriorated worldwide, both in industrialized countries and in developing countries. Although traditional wastewater technologies are focused on the removal of suspended solids, nutrients and bacteria, hundreds of organic pollutants occur in wastewater and affected urban surface waters. These new pollutants are synthetic or naturally occurring chemicals that are not often monitored in the environment but have the potential to penetrate the environment and cause known or suspected adverse ecological and/or human health effects. These contaminants are collectively referred to as the "Emerging Contaminants" and are mostly derived from domestic use and occur in trace concentrations ranging from pico to micrograms per litre. Environmental contaminants are recalcitrant for conventional wastewater treatment processes and most of them remain unaffected, leading to the contamination of receiving water. This scenario leads to the need for an advanced wastewater treatment process that can remove environmental contaminants to safely monitor fresh water sources.

Book Detail

This book explains the technologies of biological and chemical wastewater treatment processes. The biological wastewater treatment processes presented include: (1) bioremediation of wastewater that includes aerobic treatment (oxidation ponds, aerating lagoons, aerobic bioreactors, active sludge, percolation or drip filters, biological filters, rotating biological contactors, biological removal of nutrients) and anaerobic treatment (anaerobic bioreactors), anaerobic lagoons); (2) phytoremediation of waste water consisting of engineered wetlands, rhizofiltration, rhizodegradation, phytodegradation, phytoaccumulation, Phyto transformation and hyperaccumulators; and (3) mycoremediation of wastewater. The chemical wastewater treatment processes discussed include chemical precipitation (coagulation, flocculation), ion exchange, neutralization, adsorption, and disinfection (chlorination / dechlorination, ozone, UV light). In addition, this chapter explains the wastewater treatment plants and illustrates them in terms of plant size, plant layout, and plant design and installation location.

Binding

Hardcover ▾

 Clear

Publication Date: December 3, 2021

Status: Available

Pages: 319

1

Add to cart

 Add to Wishlist

ISBN: 978-1-68507-235-3

Categories: 2021, Books, Environmental Science, Engineering and Technology, Environmental Sciences, Nova, Science and Technology, Waste and Waste Management

Table of Contents

Preface

Chapter 1. Persistent Organic Pollutants: An Environmental Menace

(V.P. Sharma and Maulin P Shah – Prof AcSIR & Head Quality Assurance, CSIR-Indian Institute of Toxicology Research, Lucknow, Industrial Wastewater Research Lab, Enviro Technology Limited, Ahmedabad, India)

Chapter 2. Removal Of Emerging Contaminants Present in Wastewater by Using Advanced Oxidation Processes

(M. M. Ghangrekar, Monali Priyadarshini – School of Environmental Science and Engineering, Indian Institute of Technology Kharagpur, Kharagpur, India, et al.)

Chapter 3. Nanoremediation of Industrial Heavy Metal Effluents Using Carbon Nanomaterials as Superb Nanoadsorbents

(Basma A. Omran and M.O. Abdelisalam – Petroleum Biotechnology Laboratory, Processes Design & Development Department, Egyptian Petroleum Research Institute, Nasr City, Cairo, Egypt, et al.)

Chapter 4. Emerging Pollutants: Occurrence, Fate, Impacts and Removal Technologies

(Sonam Tiwari, Rohit Kushwaha, Pranjal Tripathi, R.S. Singh, Devendra Mohan – Department of Civil Engineering, Indian Institute of Technology (Banaras Hindu University) Varanasi, India, et al.)

Chapter 5. Nanotechnological Interventions to Tackle Heavy Metal Pollution

(Ashish S Gite, Karthic A, Jaya R Lakkakula, Nilesh S Wagh – Amity Institute of Biotechnology, Amity University Maharashtra, Mumbai – Pune Expressway, Bhatnagar Post – Somathe, Panvel, Maharashtra)

Chapter 6. Bioremediation: A Novel Way to Deal with Petroleum Sludge for Sustainable Environment

(Hiren K. Patel, Rishu K. Kalaria, Divyesh K. Vasava – School of Science, P. P. Savani University, Surat, Gujarat, India, et al.)

Chapter 7. Advanced Oxidation Process in Wastewater Reuse

(Khushboo Dasauni and Tapan Kumar Nailwal – Department of Biotechnology, Sir J. C. Bose Technical Campus, Bhimtal, Kumaun University Nainital, Uttarakhand, India)

Chapter 8. Photocatalysis as Advanced Oxidation Processes for Wastewater Treatment

(Manash Protim Mudoi, Amit K. Thakur, Abhimanyu Singh Khichi, Ravi Shankar – Department of Chemical Engineering, University of Petroleum and Energy Studies, Dehradun, Uttarakhand, India, et al.)

Chapter 9. Role of Fungal and Plant Systems in Wastewater Treatment: Mechanisms and Applications

(Nitin Chauhan, Arvind Arya, Sukirti Khantwal, Surabhi, Shivangi Sharma, Randhir Kumar Bharti, Priyadarshini Dey, Sunil Gola, Pankaj Kumar Tyagi, Deepak Gola – Department of Microbiology, Swami Shradhanand College, University of Delhi, Delhi, India, et al.)

Chapter 10. Insights into a Novel Technology of Limestone-Sawdust-Bacteria and Nano TiO₂ for Treatment of Acid Mine Drainage

(Hoang-Nam Nguyen, Khac-Uan Do – School of Environmental Science and Technology, Hanoi University of Science and Technology, Hanoi, Vietnam, et al.)

Chapter 11. Different Approaches for Bioremediation of Harmful Pollutants

(Swatilekha Pati, Somok Banerjee, Bratati Paul, Ashutosh Kumar – Department of Microbiology, Tripura University (A Central University), Suryamaninagar, Agartala, Tripura, India)

Chapter 12. Nitrate Problems and its Remediation

(Anne Bhambri and Santosh Kumar Karn – Department of Biochemistry and Biotechnology, Sardar Bhagwan Singh University (Formerly, Sardar Bhagwan Singh Post Graduate Institute of Biomedical Science and Research) Balawala, Dehradun, Uttarakhand, India, et al.)

Chapter 13. Emerging Contaminants

(Beauty Rai, Anupama Shrivastava – Department of Microbiology, Parul Institute of Applied Sciences Parul University, Vadodara, Gujarat, India)

Chapter 14. Bioremediation of Soils Polluted with Hexavalent Chromium using Bacteria

(Rujuta Kedar Karkhanis and Anupama Shrivastav – Department of Microbiology, Parul Institute of Applied Sciences, Parul University, Vadodara, Gujarat, India)

Index

Chapter details

Chapter 9. Role of Fungal and Plant Systems in Wastewater Treatment: Mechanisms and Applications

(Nitin Chauhan, Arvind Arya, Sukirti Khantwal, Surabhi, Shivangi Sharma, Randhir Kumar Bharti, Priyadarshini Dey, Sunil Gola, Pankaj Kumar Tyagi, Deepak Gola – Department of Microbiology, Swami Shradddhanand College, University of Delhi, Delhi, India, et al.)

Maulin P. Shah, PhD
Editor

AN INNOVATIVE APPROACH OF

**ADVANCED
OXIDATION
PROCESSES**

IN WASTEWATER TREATMENT

Environmental Science, Engineering and Technology

An Innovative Approach of Advanced Oxidation Processes in Wastewater Treatment

\$230.00

Maulin P. Shah, PhD

Series: Environmental Science, Engineering and Technology

BISAC: SC1026000

DOI: <https://doi.org/10.52305/DBMP3480>

In recent decades, scientific insight into the chemistry of water has increased enormously, leading to the development of advanced wastewater and water purification technologies. However, the quality of freshwater resources has continually deteriorated worldwide, both in industrialized countries and in developing countries. Although traditional wastewater technologies are focused on the removal of suspended solids, nutrients and bacteria, hundreds of organic pollutants occur in wastewater and affected urban surface waters. These new pollutants are synthetic or naturally occurring chemicals that are not often monitored in the environment but have the potential to penetrate the environment and cause known or suspected adverse ecological and/or human health effects. These contaminants are collectively referred to as the "Emerging Contaminants" and are mostly derived from domestic use and occur in trace concentrations ranging from pico to micrograms per litre. Environmental contaminants are recalcitrant for conventional wastewater treatment processes and most of them remain unaffected, leading to the contamination of receiving water. This scenario leads to the need for an advanced wastewater treatment process that can remove environmental contaminants to safely monitor fresh water sources.

Book Detail

This book explains the technologies of biological and chemical wastewater treatment processes. The biological wastewater treatment processes presented include: (1) bioremediation of wastewater that includes aerobic treatment (oxidation ponds, aerating lagoons, aerobic bioreactors, active sludge, percolation or drip filters, biological filters, rotating biological contactors, biological removal of nutrients) and anaerobic treatment (anaerobic bioreactors), anaerobic lagoons); (2) phytoremediation of waste water consisting of engineered wetlands, rhizofiltration, rhizodegradation, phytodegradation, phytoaccumulation, Phyto transformation and hyperaccumulators; and (3) mycoremediation of wastewater. The chemical wastewater treatment processes discussed include chemical precipitation (coagulation, flocculation), ion exchange, neutralization, adsorption, and disinfection (chlorination / dechlorination, ozone, UV light). In addition, this chapter explains the wastewater treatment plants and illustrates them in terms of plant size, plant layout, and plant design and installation location.

Binding

Hardcover ▾

 Clear

Publication Date: December 3, 2021

Status: Available

Pages: 319

1

Add to cart

 Add to Wishlist

ISBN: 978-1-68507-235-3

Categories: 2021, Books, Environmental Science, Engineering and Technology, Environmental Sciences, Nova, Science and Technology, Waste and Waste Management

Table of Contents

Preface

Chapter 1. Persistent Organic Pollutants: An Environmental Menace

(V.P. Sharma and Maulin P Shah – Prof AcSIR & Head Quality Assurance, CSIR-Indian Institute of Toxicology Research, Lucknow, Industrial Wastewater Research Lab, Enviro Technology Limited, Ahmedabad, India)

Chapter 2. Removal Of Emerging Contaminants Present in Wastewater by Using Advanced Oxidation Processes

(M. M. Ghangrekar, Monali Priyadarshini – School of Environmental Science and Engineering, Indian Institute of Technology Kharagpur, Kharagpur, India, et al.)

Chapter 3. Nanoremediation of Industrial Heavy Metal Effluents Using Carbon Nanomaterials as Superb Nanoabsorbents

(Basma A. Omran and M.O. Abdelisalam – Petroleum Biotechnology Laboratory, Processes Design & Development Department, Egyptian Petroleum Research Institute, Nasr City, Cairo, Egypt, et al.)

Chapter 4. Emerging Pollutants: Occurrence, Fate, Impacts and Removal Technologies

(Sonam Tiwari, Rohit Kushwaha, Pranjal Tripathi, R.S. Singh, Devendra Mohan – Department of Civil Engineering, Indian Institute of Technology (Banaras Hindu University) Varanasi, India, et al.)

Chapter 5. Nanotechnological Interventions to Tackle Heavy Metal Pollution

(Ashish S Gite, Karthic A, Jaya R Lakkakula, Nilesh S Wagh – Amity Institute of Biotechnology, Amity University Maharashtra, Mumbai – Pune Expressway, Bhatnagar Post – Somathe, Panvel, Maharashtra)

Chapter 6. Bioremediation: A Novel Way to Deal with Petroleum Sludge for Sustainable Environment

(Hiren K. Patel, Rishikesh K. Kalaria, Divyesh K. Vasava – School of Science, P. P. Savani University, Surat, Gujarat, India, et al.)

Chapter 7. Advanced Oxidation Process in Wastewater Reuse

(Khushboo Dasauni and Tapan Kumar Nailwal – Department of Biotechnology, Sir J. C. Bose Technical Campus, Bhimtal, Kumaun University Nainital, Uttarakhand, India)

Chapter 8. Photocatalysis as Advanced Oxidation Processes for Wastewater Treatment

(Manash Protim Mudoi, Amit K. Thakur, Abhimanyu Singh Khichi, Ravi Shankar – Department of Chemical Engineering, University of Petroleum and Energy Studies, Dehradun, Uttarakhand, India, et al.)

Chapter 9. Role of Fungal and Plant Systems in Wastewater Treatment: Mechanisms and Applications

(Nitin Chauhan, Arvind Arya, Sukirti Khantwal, Surabhi, Shivangi Sharma, Randhir Kumar Bharti, Priyadarshini Dey, Sunil Gola, Pankaj Kumar Tyagi, Deepak Gola – Department of Microbiology, Swami Shradhanand College, University of Delhi, Delhi, India, et al.)

Chapter 10. Insights into a Novel Technology of Limestone-Sawdust-Bacteria and Nano TiO₂ for Treatment of Acid Mine Drainage

(Hoang-Nam Nguyen, Khac-Uan Do – School of Environmental Science and Technology, Hanoi University of Science and Technology, Hanoi, Vietnam, et al.)

Chapter 11. Different Approaches for Bioremediation of Harmful Pollutants

(Swatilekha Pati, Somok Banerjee, Bratati Paul, Ashutosh Kumar – Department of Microbiology, Tripura University (A Central University), Suryamaninagar, Agartala, Tripura, India)

Chapter 12. Nitrate Problems and its Remediation

(Anne Bhambri and Santosh Kumar Karn – Department of Biochemistry and Biotechnology, Sardar Bhagwan Singh University (Formerly, Sardar Bhagwan Singh Post Graduate Institute of Biomedical Science and Research) Balawala, Dehradun, Uttarakhand, India, et al.)

Chapter 13. Emerging Contaminants

(Beauty Rai, Anupama Shrivastava – Department of Microbiology, Parul Institute of Applied Sciences Parul University, Vadodara, Gujarat, India)

Chapter 14. Bioremediation of Soils Polluted with Hexavalent Chromium using Bacteria

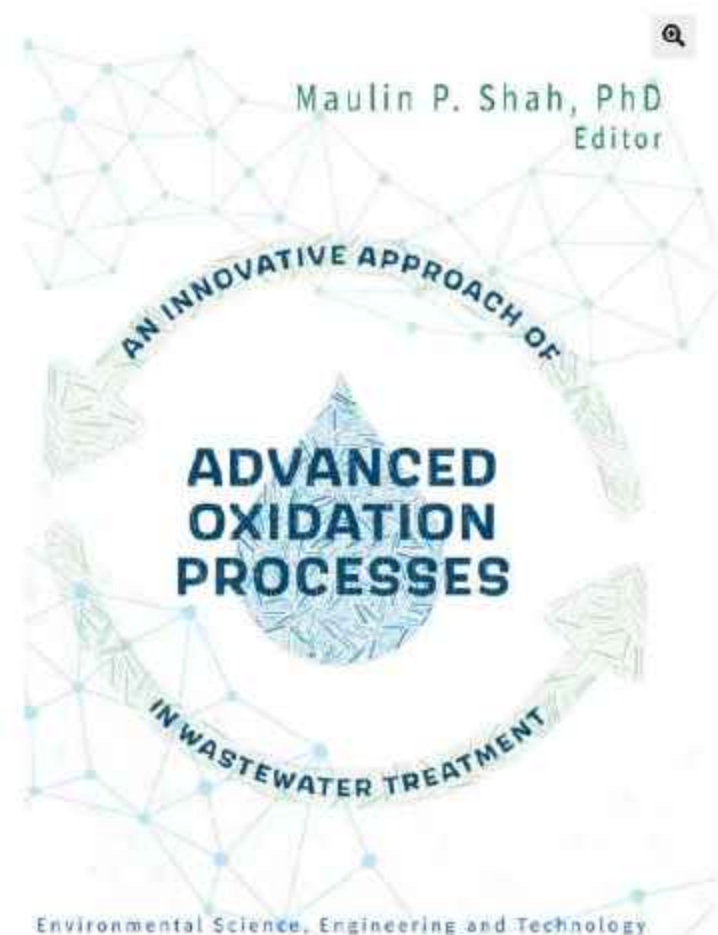
(Rujuta Kedar Karkhanis and Anupama Shrivastav – Department of Microbiology, Parul Institute of Applied Sciences, Parul University, Vadodara, Gujarat, India)

Index

Chapter details

Chapter 9. Role of Fungal and Plant Systems in Wastewater Treatment: Mechanisms and Applications

(Nitin Chauhan, Arvind Arya, Sukirti Khantwal, Surabhi, Shivangi Sharma, Randhir Kumar Bharti, Priyadarshini Dey, Sunil Gola, Pankaj Kumar Tyagi, Deepak Gola – Department of Microbiology, Swami Shradddhanand College, University of Delhi, Delhi, India, et al.)



An Innovative Approach of Advanced Oxidation Processes in Wastewater Treatment

\$230.00

Maulin P. Shah, PhD

Series: *Environmental Science, Engineering and Technology*

BISAC: SC1026000

DOI: <https://doi.org/10.52305/DBMP3480>

In recent decades, scientific insight into the chemistry of water has increased enormously, leading to the development of advanced wastewater and water purification technologies. However, the quality of freshwater resources has continually deteriorated worldwide, both in industrialized countries and in developing countries. Although traditional wastewater technologies are focused on the removal of suspended solids, nutrients and bacteria, hundreds of organic pollutants occur in wastewater and affected urban surface waters. These new pollutants are synthetic or naturally occurring chemicals that are not often monitored in the environment but have the potential to penetrate the environment and cause known or suspected adverse ecological and/or human health effects. These contaminants are collectively referred to as the "Emerging Contaminants" and are mostly derived from domestic use and occur in trace concentrations ranging from pico to micrograms per litre. Environmental contaminants are recalcitrant for conventional wastewater treatment processes and most of them remain unaffected, leading to the contamination of receiving water. This scenario leads to the need for an advanced wastewater treatment process that can remove environmental contaminants to safely monitor fresh water sources.

Book Detail

This book explains the technologies of biological and chemical wastewater treatment processes. The biological wastewater treatment processes presented include: (1) bioremediation of wastewater that includes aerobic treatment (oxidation ponds, aerating lagoons, aerobic bioreactors, active sludge, percolation or drip filters, biological filters, rotating biological contactors, biological removal of nutrients) and anaerobic treatment (anaerobic bioreactors), anaerobic lagoons); (2) phytoremediation of waste water consisting of engineered wetlands, rhizofiltration, rhizodegradation, phytodegradation, phytoaccumulation, Phyto transformation and hyperaccumulators; and (3) mycoremediation of wastewater. The chemical wastewater treatment processes discussed include chemical precipitation (coagulation, flocculation), ion exchange, neutralization, adsorption, and disinfection (chlorination / dechlorination, ozone, UV light). In addition, this chapter explains the wastewater treatment plants and illustrates them in terms of plant size, plant layout, and plant design and installation location.

Binding

Hardcover ▾

 Clear

Publication Date: December 3, 2021

Status: Available

Pages: 319

1

Add to cart

 Add to Wishlist

ISBN: 978-1-68507-235-3

Categories: 2021, Books, Environmental Science, Engineering and Technology, Environmental Sciences, Nova, Science and Technology, Waste and Waste Management

Table of Contents

Preface

Chapter 1. Persistent Organic Pollutants: An Environmental Menace

(V.P. Sharma and Maulin P Shah – Prof AcSIR & Head Quality Assurance, CSIR-Indian Institute of Toxicology Research, Lucknow, Industrial Wastewater Research Lab, Enviro Technology Limited, Ahmedabad, India)

Chapter 2. Removal Of Emerging Contaminants Present in Wastewater by Using Advanced Oxidation Processes

(M. M. Ghangrekar, Monali Priyadarshini – School of Environmental Science and Engineering, Indian Institute of Technology Kharagpur, Kharagpur, India, et al.)

Chapter 3. Nanoremediation of Industrial Heavy Metal Effluents Using Carbon Nanomaterials as Superb Nanoadsorbents

(Basma A. Omran and M.O. Abdelisalam – Petroleum Biotechnology Laboratory, Processes Design & Development Department, Egyptian Petroleum Research Institute, Nasr City, Cairo, Egypt, et al.)

Chapter 4. Emerging Pollutants: Occurrence, Fate, Impacts and Removal Technologies

(Sonam Tiwari, Rohit Kushwaha, Pranjal Tripathi, R.S. Singh, Devendra Mohan – Department of Civil Engineering, Indian Institute of Technology (Banaras Hindu University) Varanasi, India, et al.)

Chapter 5. Nanotechnological Interventions to Tackle Heavy Metal Pollution

(Ashish S Gite, Karthic A, Jaya R Lakkakula, Nilesh S Wagh – Amity Institute of Biotechnology, Amity University Maharashtra, Mumbai – Pune Expressway, Bhatnagar Post – Somathe, Panvel, Maharashtra)

Chapter 6. Bioremediation: A Novel Way to Deal with Petroleum Sludge for Sustainable Environment

(Hiren K. Patel, Rishu K. Kalaria, Divyesh K. Vasava – School of Science, P. P. Savani University, Surat, Gujarat, India, et al.)

Chapter 7. Advanced Oxidation Process in Wastewater Reuse

(Khushboo Dasauni and Tapan Kumar Nailwal – Department of Biotechnology, Sir J. C. Bose Technical Campus, Bhimtal, Kumaun University Nainital, Uttarakhand, India)

Chapter 8. Photocatalysis as Advanced Oxidation Processes for Wastewater Treatment

(Manash Protim Mudoi, Amit K. Thakur, Abhimanyu Singh Khichi, Ravi Shankar – Department of Chemical Engineering, University of Petroleum and Energy Studies, Dehradun, Uttarakhand, India, et al.)

Chapter 9. Role of Fungal and Plant Systems in Wastewater Treatment: Mechanisms and Applications

(Nitin Chauhan, Arvind Arya, Sukirti Khantwal, Surabhi, Shivangi Sharma, Randhir Kumar Bharti, Priyadarshini Dey, Sunil Gola, Pankaj Kumar Tyagi, Deepak Gola – Department of Microbiology, Swami Shradhanand College, University of Delhi, Delhi, India, et al.)

Chapter 10. Insights into a Novel Technology of Limestone-Sawdust-Bacteria and Nano TiO₂ for Treatment of Acid Mine Drainage

(Hoang-Nam Nguyen, Khac-Uan Do – School of Environmental Science and Technology, Hanoi University of Science and Technology, Hanoi, Vietnam, et al.)

Chapter 11. Different Approaches for Bioremediation of Harmful Pollutants

(Swatilekha Pati, Somok Banerjee, Bratati Paul, Ashutosh Kumar – Department of Microbiology, Tripura University (A Central University), Suryamaninagar, Agartala, Tripura, India)

Chapter 12. Nitrate Problems and its Remediation

(Anne Bhambri and Santosh Kumar Karn – Department of Biochemistry and Biotechnology, Sardar Bhagwan Singh University (Formerly, Sardar Bhagwan Singh Post Graduate Institute of Biomedical Science and Research) Balawala, Dehradun, Uttarakhand, India, et al.)

Chapter 13. Emerging Contaminants

(Beauty Rai, Anupama Shrivastava – Department of Microbiology, Parul Institute of Applied Sciences Parul University, Vadodara, Gujarat, India)

Chapter 14. Bioremediation of Soils Polluted with Hexavalent Chromium using Bacteria

(Rujuta Kedar Karkhanis and Anupama Shrivastav – Department of Microbiology, Parul Institute of Applied Sciences, Parul University, Vadodara, Gujarat, India)

Index

Chapter details

Chapter 9. Role of Fungal and Plant Systems in Wastewater Treatment: Mechanisms and Applications

(Nitin Chauhan, Arvind Arya, Sukirti Khantwal, Surabhi, Shivangi Sharma, Randhir Kumar Bharti, Priyadarshini Dey, Sunil Gola, Pankaj Kumar Tyagi, Deepak Gola – Department of Microbiology, Swami Shradddhanand College, University of Delhi, Delhi, India, et al.)



Development in Wastewater Treatment Research and Processes

Removal of Emerging Contaminants from Wastewater through Bio-nanotechnology

1st Edition - September 11, 2021 • Imprint: Elsevier

Editors: Susana Rodriguez-Couto, Maulin P. Shah, Jayanta Kumar Biswas

Language: English • Paperback ISBN: 9780323855839 • eBook ISBN: 9780323900119

Description

Removal of Emerging Contaminants from Wastewater through Bio-nanotechnology showcases profiles of the nonregulated contaminants termed as "emerging contaminants," which comprise industrial and household persistent toxic chemicals, pharmaceuticals and personal care products (PPCPs), pesticides, surfactants and surfactant residues, plasticizers and industrial additives, manufactured nanomaterials and nanoparticles, microplastics, etc. that are used extensively in everyday life. The occurrence of "emerging contaminants" in wastewater, and their behavior during wastewater treatment and production of drinking water are key issues in the reuse and recycling of water resources.

This book focuses on the exploitation of Nano-biotechnology inclusive of the state-of-the-art remediate strategies to degrade/detoxify/stabilize toxic and hazardous contaminants and restore contaminated sites, which is not as comprehensively discussed in the existing titles on similar topics available in the global market. In addition, it discusses the potential environmental and health hazards and ecotoxicity associated with the widespread distribution of emerging contaminants in the water bodies. It also considers the life cycle assessment (LCA) of emerging (micro)-pollutants with suitable case studies from various industrial sources.

1. Nanoadsorbents for scavenging emerging contaminants from wastewater
2. Treatment aspect of an emerging pollutant from Pharmaceutical industries using advanced oxidation process: past, current, and future trends
3. Membrane bioreactor (MBR) as an advanced wastewater treatment technology for removal of synthetic microplastics
4. Strategies to cope with the emerging waste water contaminants through adsorption regimes
5. Performances of membrane bioreactor technology for treating domestic wastewater operated at different sludge retention time
6. Advances in nanotechnologies of waste water treatment: strategies and emerging opportunities
7. Water and wastewater treatment through ozone-based technologies
8. Constructed wetland: a promising technology for the treatment of hazardous textile dyes and effluent
9. Biogenic nanomaterials: synthesis, characteristics, and recent trends in combating hazardous pollutants (an arising scientific horizon)
10. Removal of emerging contaminants from pharmaceutical wastewater through application of bionanotechnology
11. Recent advances in pesticides removal using agroindustry based biochar
12. Bioremediation – the natural solution
13. Detection and removal of pathogenic bacteria from wastewater using various nanoparticles
14. Application of TiO₂ photocatalysts hybridized with carbonaceous for degradation of pharmaceuticals
15. Moving bed biofilm reactor- (MBBR-) based advanced wastewater treatment technology for the removal of emerging

16. An application of bionanotechnology in removal of emerging contaminants from pharmaceutical waste
17. Removal of emerging contaminants in water Treatment by an application of nanofiltration and reverse osmosis
18. Membrane bioreactor (MBR) as an advanced wastewater treatment technology
19. Removal of pesticides from water and wastewater by solar-driven photocatalysis
20. Recent applications, reaction mechanism, and future perspective of hybrid ozonation process for water and wastewater treatment
21. Removal of emerging contaminants from pharmaceutical waste through application of bio nanotechnology
22. Antimicrobial activities of different nanoparticles concerning to wastewater treatment
23. Application of nanomaterial in wastewater treatment: recent advances and future perspective
24. Photocatalytic removal of emerging contaminants in water and wastewater treatments: a review
25. Biologically synthesized nanoparticles for dye removal
26. Removal of emerging contaminants in water treatment by nanofiltration and reverse osmosis
27. Hybrid bioreactor in combination with ozone-based technologies for industrial wastewater treatment
28. Metal organic frameworks (MOFs) in aiding water purification from emerging and ionic contaminants
29. Removal of emerging contaminants from wastewater through bionanotechnology



Development in Wastewater Treatment Research and Processes

Removal of Emerging Contaminants from Wastewater Through Bio-
nanotechnology

2022, Pages 123-138



Chapter 6 - Advances in nanotechnologies of waste water treatment: strategies and emerging opportunities

Deepak Gola^a, Anirban Adhikary^b, Randhir Kumar Bharti^c, Priyadarshini Dey^d, Sunil Gola^e,
Nitin Chauhan^{f,g}, Sunil Kumar Srivastava^g, Rekha Mehrotra^f

Show more ✓

+ Add to Mendeley  Share  Cite

<https://doi.org/10.1016/B978-0-323-85583-9.00018-1> ↗

Get rights and content ↗

Chapter Details

Abstract

Nanotechnology is a science of innovating and developing molecules of nanoscale range (1- 100 nm). Recent research has revealed the great potential hiding inside nanoparticles of variable shapes and sizes. As per reports, nanotechnologies has been successfully applied in sectors i.e., energy, healthcare, electronics, optics, food, textiles, and agriculture. However, from last few years, efforts have been made to develop clean technologies for remediation of waste water contaminated with carcinogenic dyes, heavy metals, pesticides, antibiotics and pathogenic microbes. Being smaller in size, various different nanoparticles offers large surface area useful for absorption and high degree interactions with contaminants present in waste waters. Recent advances in nanoremediation have indicated the development of efficient ways in treating waste waters precisely upto various depths of small and large scale setups. Materials such as nanosorbents (NS), metallic nanoparticles (MtNPs), nanocatalysts (NC), nanopolymers (NP) and other such materials have been designed and developed to treat different grades, strengths and volumes of waste waters. The present chapter summarizes various nanotechnologies currently being used for waste water treatment with emphasis on developing smart nanotechnologies which can effectively remove multiple different contaminants of waste waters.



 [PREVIEW BOOK](#)

 [Table of Contents](#)

 [Book Description](#)

1st Edition

Big Data Analysis for Green Computing Concepts and Applications

Edited By Rohit Sharma, Dilip Kumar Sharma, Dhowmya Bhatt, Binh Thai Pham

Copyright 2022

Paperback
₹1495

eBook
£44.09


ISBN 9781032965017

186 Pages 25 B/W Illustrations

Published October 29, 2021 by CRC Press

 Free Shipping (14-21 Business Days)
[shipping options](#)

Paperback

 This format of the title is only available for local purchase in India, Pakistan, Nepal, Bhutan, Bangladesh and Sri Lanka.

₹1495

PURCHASE LOCALLY 

[ADD TO WISH LIST](#)



Table of Contents

Chapter 1 Multi-Criteria and Fuzzy-Based Decision Making: Applications in Environment Pollution Control for Sustainable Development Chapter 2 Security and Privacy Requirements for IoMT-Based Smart Healthcare System: Challenges, Solutions, and Future Scope Chapter 3 The Rise of "Big Data" on Cloud Computing Chapter 4 Effect of the Measurement on Big Data Analytics: An Evolutive Perspective with Business Intelligence Chapter 5 Performance Analysis for Provisioning and Energy Efficiency Distributed in Cloud Computing Chapter 6 Using Internet of Things (IoT) for Smart Home Automation and Metering System Chapter 7 Big Data Analysis and Machine Learning for Green Computing: Concepts and Applications Chapter 8 Fundamental Concepts and Applications of Blockchain Technology Chapter 9 Mental Disorder Detection Using Machine Learning Chapter 10 Blockchain Technology for Industry 4.0 Applications: Issues, Challenges and Future Research Directions



Chapter

Mental Disorder Detection Using Machine Learning

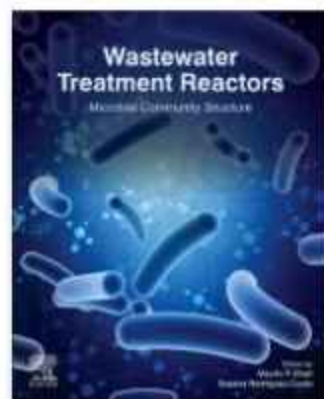
By [Charu Chhabra](#), [Sneha Chaudhary](#), [Ayasha Malik](#), [Bharat Bhushan](#)

Book [Big Data Analysis for Green Computing](#)

Edition	1st Edition
First Published	2021
Imprint	CRC Press
Pages	15
eBook ISBN	9781003032328

ABSTRACT

Mental health depicts the status and condition of the welfare of the society. It indicates the ability of an individual to handle stress, decision-making and handling situations in daily life dealings. By the virtue of an increase in the number of cases of mental disorders arises a need of emphasizing on possibly causes of the disorder and remedies to cure. In recent years, there has been a tremendous increase in the statistics of the occurrence of mental illness and instability. Although the rate of diagnosis of mental illness has been improved over the time but to the major extent, the issues remain undetected. In the recent 5 years, machine learning has been widely used in the areas of neurological disorders, radiology, medical image for diagnosis along with prognosis in disease pattern matching, Alzheimer's Disease/Mild Cognitive Impairment, brain tumor, schizophrenia, Parkinson's Disease, stroke and traumatic brain injuries, post-partum depression, epilepsy, autism disease. There has been a significant increase in usage of machine learning techniques in keeping the track of brain disorders in neuroimaging data. The paper will contribute to various factors responsible for mental health problems thereby leading to mental illness. These factors include stress, anxiety, depression, obsession and obsessive disorder. Also, the paper will focus on the working on the need for more effective mental healthcare systems combined the need of digital technology for pattern matching for recognition followed by prediction and finally analysis would play a vital role. The paper emphasizes on how machine learning has contributed so far in the disorder detection and also the vitality on how it plays an indispensable role concerning Electronic Health Records (EHR) management as statistics states that mental health captures the humongous of the data when comparing to all the medical specialty.



Wastewater Treatment Reactors

Microbial Community Structure

1st Edition - May 12, 2021 • Imprint: Elsevier

Editors: Maulin P. Shah, Susana Rodriguez-Couto • Language: English

Paperback ISBN: 9780128239919 • eBook ISBN: 9780128242445

Description

Wastewater Treatment Reactors: Microbial Community Structure analyzes microbial community structure in relation to changes in physico-chemical parameters, the gene content (metagenome) or gene expression (metatranscriptome) of microbial communities in relation to changes in physico-chemical parameters, physiological aspects of microbial communities, enrichment cultures or pure cultures of key species in relation to changes in physico-chemical parameters, and modeling of potential consequences of changes in microbial community structure or function for higher trophic levels in a given habitat.

As several studies have been carried out to understand bulking phenomena and the importance of environmental factors on sludge settling characteristics, which are thought to be strongly influenced by flocculation, sludge bulking, foaming and rising, this book is an ideal resource on the topics covered.

1. Strategic approach for characterization of bacterial community in enhanced biological phosphate removal process
2. Removal of pollutants from wastewater via biological method and shift in microbial community profile during treatment process
3. Nitrogen removal bacterial communities characteristics and dynamics at lab scale reactors
4. Role of the microbial community in the anaerobic digester for biomethane production
5. Microbial diversity, interactions and biodegradation of hazardous textile wastewater using biological consortium technology
6. An overview of theoretical and experimental approach to study environmental microflora
7. Microbial diversity, interactions and biodegradation of organic and inorganic contaminants
8. Metagenomics- A field revealing the secrets into microbial world of waste water treatment plants.
9. Metagenomics: a powerful lens viewing the microbial world
10. Environmental Parameters Affecting Anaerobic Microbial Community
11. Molecular techniques used to identify perfluorooctanoic acid degrading bacteria/ microbes and their applications in wastewater treatment reactor/plant
12. Enhanced biological phosphate removal process for wastewater treatment: a sustainable approach
13. Modelling microbial communities: Consensual among experimentalist and theorist
14. Metagenomics: a powerful lens viewing the microbial world

15. Microbial diversity, interactions and Biodegradation/Biotransformation of organic and inorganic contaminants
16. Microbial community diversity in a waste water treatment plant
17. Molecular Biology Techniques for the Identification of Microbial Community in Waste- Water Treatment Reactors
18. Aerobic sludge granulation and enhanced dicamba removal efficiency in the presence of AQS redox mediator in a lab scale anaerobic-aerobic treatment method
19. Unraveling microbial complexities via metagenomic approach: Expanding cross-talk for environment management & Prospecting
20. Metagenomics: A computational approach in emergence of novel applications
21. Microbial Community Analysis of Domestic Wastewater during Blackwater Treatment
22. Molecular Biological Techniques used in Environmental Engineering: Current prospects and challenges
23. Removal of Heavy Metals by Microbial Communities
24. A comprehensive insight into tetracycline resistant bacteria and antibiotic resistance genes in activated sludge using next-generation sequencing
25. Bacterial Community Structure, Composition and Their Role in Biological Wastewater Treatment Reactors Plants



Wastewater Treatment Reactors

Microbial Community Structure



2021, Pages 19-38



2 - Removal of pollutants from wastewater via biological methods and shifts in microbial community profile during treatment process

Vivek Dalvi¹, Farah Naaz¹, Harshita Nigam¹, Rahul Jain¹, Saurabh Samuchiwal¹, Shweta Kalia¹, Rahul Kumar¹, Megha Mathur¹, Farhat Bano¹, Anushree Malik¹, Astha Singh², Anu Kriti², Nitin Chauhan³, Tanu Bansal⁴, Deepak Gola^{1,2}

Show more ▾

+ Add to Mendeley  Share  Cite

<https://doi.org/10.1016/B978-0-12-823991-9.00022-8> ↗

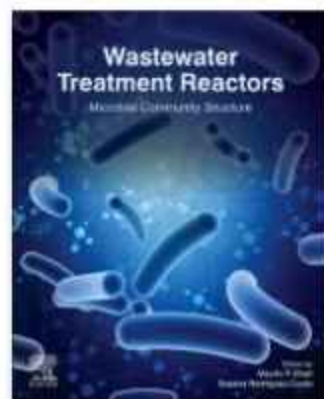
Get rights and content ↗

Chapter

Abstract

Abstract

Availability of decontaminated and clean water is one of the important requisites of the growing population around the globe. However, the fast-growing urbanization and expansion of industrialization along with excessive usage and consumption of chemical products for multiple purposes has increased the contamination level of available waterbodies all over the world. The presence of inorganic and organic pollutants in water bodies causes multiple health hazards. These organic and inorganic pollutants can be removed by biological methods, that is, biodegradation and biotransformation, utilizing various microorganisms (bacteria, algae, and fungi). Studies have shown that during the decontamination process of wastewater using the microbial community, changes occur in the community structure of microbes due to different types of pollutants present in wastewater and the operating parameters of the process. The present review is focused on evaluating the efficacies of various biological methods/technologies used for the removal of organic and inorganic pollutants. Further, research to understand the shift of microbial community profile in different type of wastewater and treatment processes has also been studied.



Wastewater Treatment Reactors

Microbial Community Structure

1st Edition - May 12, 2021 • Imprint: Elsevier

Editors: Maulin P. Shah, Susana Rodriguez-Couto • Language: English

Paperback ISBN: 9780128239919 • eBook ISBN: 9780128242445

Description

Wastewater Treatment Reactors: Microbial Community Structure analyzes microbial community structure in relation to changes in physico-chemical parameters, the gene content (metagenome) or gene expression (metatranscriptome) of microbial communities in relation to changes in physico-chemical parameters, physiological aspects of microbial communities, enrichment cultures or pure cultures of key species in relation to changes in physico-chemical parameters, and modeling of potential consequences of changes in microbial community structure or function for higher trophic levels in a given habitat.

As several studies have been carried out to understand bulking phenomena and the importance of environmental factors on sludge settling characteristics, which are thought to be strongly influenced by flocculation, sludge bulking, foaming and rising, this book is an ideal resource on the topics covered.

1. Strategic approach for characterization of bacterial community in enhanced biological phosphate removal process
2. Removal of pollutants from wastewater via biological method and shift in microbial community profile during treatment process
3. Nitrogen removal bacterial communities characteristics and dynamics at lab scale reactors
4. Role of the microbial community in the anaerobic digester for biomethane production
5. Microbial diversity, interactions and biodegradation of hazardous textile wastewater using biological consortium technology
6. An overview of theoretical and experimental approach to study environmental microflora
7. Microbial diversity, interactions and biodegradation of organic and inorganic contaminants
8. Metagenomics- A field revealing the secrets into microbial world of waste water treatment plants.
9. Metagenomics: a powerful lens viewing the microbial world
10. Environmental Parameters Affecting Anaerobic Microbial Community
11. Molecular techniques used to identify perfluorooctanoic acid degrading bacteria/ microbes and their applications in wastewater treatment reactor/plant
12. Enhanced biological phosphate removal process for wastewater treatment: a sustainable approach
13. Modelling microbial communities: Consensual among experimentalist and theorist
14. Metagenomics: a powerful lens viewing the microbial world

15. Microbial diversity, interactions and Biodegradation/Biotransformation of organic and inorganic contaminants
16. Microbial community diversity in a waste water treatment plant
17. Molecular Biology Techniques for the Identification of Microbial Community in Waste- Water Treatment Reactors
18. Aerobic sludge granulation and enhanced dicamba removal efficiency in the presence of AQS redox mediator in a lab scale anaerobic-aerobic treatment method
19. Unraveling microbial complexities via metagenomic approach: Expanding cross-talk for environment management & Prospecting
20. Metagenomics: A computational approach in emergence of novel applications
21. Microbial Community Analysis of Domestic Wastewater during Blackwater Treatment
22. Molecular Biological Techniques used in Environmental Engineering: Current prospects and challenges
23. Removal of Heavy Metals by Microbial Communities
24. A comprehensive insight into tetracycline resistant bacteria and antibiotic resistance genes in activated sludge using next-generation sequencing
25. Bacterial Community Structure, Composition and Their Role in Biological Wastewater Treatment Reactors Plants



Wastewater Treatment Reactors

Microbial Community Structure



2021, Pages 19-38



2 - Removal of pollutants from wastewater via biological methods and shifts in microbial community profile during treatment process

Vivek Dalvi¹, Farah Naaz¹, Harshita Nigam¹, Rahul Jain¹, Saurabh Samuchiwal¹, Shweta Kalia¹, Rahul Kumar¹, Megha Mathur¹, Farhat Bano¹, Anushree Malik¹, Astha Singh², Anu Kriti², Nitin Chauhan³, Tanu Bansal⁴, Deepak Gola^{1,2}

Show more ▾

+ Add to Mendeley  Share  Cite

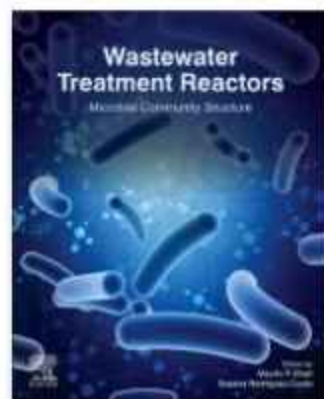
<https://doi.org/10.1016/B978-0-12-823991-9.00022-8> ↗

Get rights and content ↗

Chapter Abstract

Abstract

Availability of decontaminated and clean water is one of the important requisites of the growing population around the globe. However, the fast-growing urbanization and expansion of industrialization along with excessive usage and consumption of chemical products for multiple purposes has increased the contamination level of available waterbodies all over the world. The presence of inorganic and organic pollutants in water bodies causes multiple health hazards. These organic and inorganic pollutants can be removed by biological methods, that is, biodegradation and biotransformation, utilizing various microorganisms (bacteria, algae, and fungi). Studies have shown that during the decontamination process of wastewater using the microbial community, changes occur in the community structure of microbes due to different types of pollutants present in wastewater and the operating parameters of the process. The present review is focused on evaluating the efficacies of various biological methods/technologies used for the removal of organic and inorganic pollutants. Further, research to understand the shift of microbial community profile in different type of wastewater and treatment processes has also been studied.



Wastewater Treatment Reactors

Microbial Community Structure

1st Edition - May 12, 2021 • Imprint: Elsevier

Editors: Maulin P. Shah, Susana Rodriguez-Couto • Language: English

Paperback ISBN: 9780128239919 • eBook ISBN: 9780128242445

Description

Wastewater Treatment Reactors: Microbial Community Structure analyzes microbial community structure in relation to changes in physico-chemical parameters, the gene content (metagenome) or gene expression (metatranscriptome) of microbial communities in relation to changes in physico-chemical parameters, physiological aspects of microbial communities, enrichment cultures or pure cultures of key species in relation to changes in physico-chemical parameters, and modeling of potential consequences of changes in microbial community structure or function for higher trophic levels in a given habitat.

As several studies have been carried out to understand bulking phenomena and the importance of environmental factors on sludge settling characteristics, which are thought to be strongly influenced by flocculation, sludge bulking, foaming and rising, this book is an ideal resource on the topics covered.

1. Strategic approach for characterization of bacterial community in enhanced biological phosphate removal process
2. Removal of pollutants from wastewater via biological method and shift in microbial community profile during treatment process
3. Nitrogen removal bacterial communities characteristics and dynamics at lab scale reactors
4. Role of the microbial community in the anaerobic digester for biomethane production
5. Microbial diversity, interactions and biodegradation of hazardous textile wastewater using biological consortium technology
6. An overview of theoretical and experimental approach to study environmental microflora
7. Microbial diversity, interactions and biodegradation of organic and inorganic contaminants
8. Metagenomics- A field revealing the secrets into microbial world of waste water treatment plants.
9. Metagenomics: a powerful lens viewing the microbial world
10. Environmental Parameters Affecting Anaerobic Microbial Community
11. Molecular techniques used to identify perfluorooctanoic acid degrading bacteria/ microbes and their applications in wastewater treatment reactor/plant
12. Enhanced biological phosphate removal process for wastewater treatment: a sustainable approach
13. Modelling microbial communities: Consensual among experimentalist and theorist
14. Metagenomics: a powerful lens viewing the microbial world

15. Microbial diversity, interactions and Biodegradation/Biotransformation of organic and inorganic contaminants
16. Microbial community diversity in a waste water treatment plant
17. Molecular Biology Techniques for the Identification of Microbial Community in Waste- Water Treatment Reactors
18. Aerobic sludge granulation and enhanced dicamba removal efficiency in the presence of AQS redox mediator in a lab scale anaerobic-aerobic treatment method
19. Unraveling microbial complexities via metagenomic approach: Expanding cross-talk for environment management & Prospecting
20. Metagenomics: A computational approach in emergence of novel applications
21. Microbial Community Analysis of Domestic Wastewater during Blackwater Treatment
22. Molecular Biological Techniques used in Environmental Engineering: Current prospects and challenges
23. Removal of Heavy Metals by Microbial Communities
24. A comprehensive insight into tetracycline resistant bacteria and antibiotic resistance genes in activated sludge using next-generation sequencing
25. Bacterial Community Structure, Composition and Their Role in Biological Wastewater Treatment Reactors Plants



Wastewater Treatment Reactors

Microbial Community Structure



2021, Pages 19-38



2 - Removal of pollutants from wastewater via biological methods and shifts in microbial community profile during treatment process

Vivek Dalvi¹, Farah Naaz¹, Harshita Nigam¹, Rahul Jain¹, Saurabh Samuchiwal¹, Shweta Kalia¹, Rahul Kumar¹, Megha Mathur¹, Farhat Bano¹, Anushree Malik¹, Astha Singh², Anu Kriti², Nitin Chauhan³, Tanu Bansal⁴, Deepak Gola^{1,2}

Show more ▾

+ Add to Mendeley  Share  Cite

<https://doi.org/10.1016/B978-0-12-823991-9.00022-8> ↗

Get rights and content ↗

Chapter

Abstract

Abstract

Availability of decontaminated and clean water is one of the important requisites of the growing population around the globe. However, the fast-growing urbanization and expansion of industrialization along with excessive usage and consumption of chemical products for multiple purposes has increased the contamination level of available waterbodies all over the world. The presence of inorganic and organic pollutants in water bodies causes multiple health hazards. These organic and inorganic pollutants can be removed by biological methods, that is, biodegradation and biotransformation, utilizing various microorganisms (bacteria, algae, and fungi). Studies have shown that during the decontamination process of wastewater using the microbial community, changes occur in the community structure of microbes due to different types of pollutants present in wastewater and the operating parameters of the process. The present review is focused on evaluating the efficacies of various biological methods/technologies used for the removal of organic and inorganic pollutants. Further, research to understand the shift of microbial community profile in different type of wastewater and treatment processes has also been studied.

Book Detail

Handbook of Nanomaterials for Sensing Applications

A volume in Micro and Nano Technologies

Book • 2021



Edited by:
Chaudhery Mustasir Hussain and Suresh
Kumar Kailasa

↓ About the book

Browse this book



By table of contents

Book description

Handbook of Nanomaterials for Intelligent Sensing Applications provides insights into the production of nanosensors and their applications. The book takes an interdisciplinary appr ... [read full description](#)



Purchase book



Share this book

Details

ISBN

978-0-12-820783-3

Language

English

Published

2021

Copyright

Copyright © 2021 Elsevier Inc. All rights reserved.

Imprint

Elsevier

DOI

<https://doi.org/10.1016/C2019-0-01137-5>

Editors

Chaudhery Mustansar Hussain

Suresh Kumar Kailasa

Table of contents

Actions for selected chapters

[Select all](#) / [Deselect all](#)



Export citations

☐ [Full text access](#)

Front Matter, Copyright, Contributors

- > *Section I: Intelligent sensor—Nano candidates and their synthesis techniques*
- > *Section II: Nano fabrication techniques—Biosensors*
- > *Section III: Nano fabrication techniques—Chemical sensors*
- > *Section IV: Nano fabrication techniques—Physical sensors*
- > *Section V: Intelligent nano sensors(INS)—Environmental applications*
- > *Section VI: Intelligent nano sensors (INS)—Electronics applications*
- > *Section VII: Intelligent nano sensors (INS)—Medical/bio applications*

☐ [Book chapter](#) [Full text access](#)

Index

Pages 631-644



[View PDF](#)

[View chapter](#) >



Handbook of Nanomaterials for Sensing Applications

Micro and Nano Technologies

2021, Pages 119-137



Chapter 7 - Nanofabrication techniques for semiconductor chemical sensors

Mona Mittal^a, Soumen Sardar^b, Atanu Jana^c

- ^a Department of Chemistry, Noida Institute of Engineering and Technology, Greater Noida, Uttar Pradesh, India
- ^b Department of Polymer Science and Technology, University of Calcutta, Calcutta, India
- ^c Division of Physics and Semiconductor Science, Dongguk University, Seoul, South Korea

Available online 16 April 2021, Version of Record 16 April 2021.

② What do these dates mean?

Abstract

Chemical sensors are defined as devices or instruments that transduce different types of chemical information such as concentration, chemical activity, and presence of metal ions or gases into a measurable and distinguishable signal. Semiconductor nanomaterials, especially one-dimensional (1D) nanomaterials like nanorods, nanoneedles, nanobelts, and nanowires, have gained tremendous attention in chemical sensing devices owing to their large surface-to-volume ratio compared with their thin film and bulk counterparts. Therefore, several 1D nanomaterials have been designed for chemical sensors for detection of O_2 and H_2 gases as well as various toxic and flammable materials such as NO_2 , CO, NH_3 , ethanol, etc. However, two-dimensional (2D) nanomaterials such as MX_2 ($M=W, Mo$, and $X=S, Se$), graphene oxide, semiconductor metal oxides (SMO), etc. have also attracted significant attention because of their high surface-to-volume ratios, ultrahigh surface sensitivity to the environment, superior electrical/optical properties, robustness, and flexibility. These nanomaterials have been synthesized by various nanofabrication techniques such as lithography, electroplating, surface treatment by plasma, chemical vapor deposition (CVD), doping of silicon, micro-electro-mechanical systems (MEMS), and cracking. In this chapter, we discuss various fabrication techniques for different types of chemical sensors and opportunities and challenges toward practical applications of these novel materials and sensing devices.



About this book series

Nano and biotechnology are two of the 21st century's most promising technologies. Nanotechnology is demarcated as the design, development, and application of materials and devices whose least functional make up is on a nanometer scale (1 to 100 nm). Meanwhile, biotechnology deals with metabolic and other physiological developments of biological subjects including microorganisms. These microbial processes have opened up new opportunities to explore novel applications, for example, the biosynthesis of metal nanomaterials, with the implication that these two technologies (i.e., thus nanobiotechnology) can play a vital role in developing and executing many valuable tools in the study of life. Nanotechnology is very diverse, ranging from extensions of conventional device physics to completely new approaches based upon molecular self-assembly, from developing new materials with dimensions on the nanoscale, to investigating whether we can directly control matters on/in the atomic scale level. This idea entails its application to diverse fields of science such as plant biology, organic chemistry, agriculture, the food industry, and more. — [show all](#)

Electronic ISSN

2523-8035

Print ISSN

2523-8027

Series Editor



Ram Prasad

[Home](#) > [Nanomaterial Biointeractions at the Cellular, Organismal and System Levels](#) > Chapter

The Role of Zinc Oxide Nanoparticles in Plants: A Critical Appraisal

Chapter | First Online: 27 March 2021

pp 249–267 | [Cite this chapter](#)

[Amit Kumar](#), [Indrakant K. Singh](#) , [Rashmi Mishra](#), [Akanksha Singh](#), [Naleeni Ramawat](#) & [Archana Singh](#) 

 Part of the book series: [Nanotechnology in the Life Sciences](#) ((NALIS))

Cite this chapter

Kumar, A., Singh, I.K., Mishra, R., Singh, A., Ramawat, N., Singh, A. (2021). The Role of Zinc Oxide Nanoparticles in Plants: A Critical Appraisal. In: Sharma, N., Sahi, S. (eds) Nanomaterial Biointeractions at the Cellular, Organismal and System Levels. Nanotechnology in the Life Sciences. Springer, Cham. https://doi.org/10.1007/978-3-030-65792-5_10

Download citation

[.RIS](#)  [.ENW](#)  [.BIB](#) 

DOI
https://doi.org/10.1007/978-3-030-65792-5_10

Published
27 March 2021

Publisher Name
Springer, Cham

Print ISBN
978-3-030-65791-8

Online ISBN
978-3-030-65792-5

eBook Packages
[Biomedical and Life Sciences](#)
[Biomedical and Life Sciences \(R0\)](#)

Abstract

The role of zinc oxide nanoparticles (ZnO NPs) in plants and agriculture attracted huge interests during the last few years. A whole range of positive of NPs has been demonstrated and these exquisite material can be serve as alternatives to many fertilizers, micronutrients, fungicides or antimicrobial chemicals. The ameliorative roles against abiotic stress (drought, salinity and high temperature) in various crops are particularly significant. However, high concentrations of ZnO NPs have been observed to produce a range of toxicity including growth/yield inhibition, physiological aberrations, cytotoxicity, genotoxicity and oxidative stress. The positive or negative effects depend on the type, dose of nanomaterials, methods of treatments, developmental stage, and genotype of the species or environmental conditions. Until a fuller understating of various modes of interactions between ZnO NPs and plant genome or epigenome develops, it is difficult to use these new resources for the optimal benefit, substituting conventional agents of growth promotion or protection. This requires development of appropriate methods to identify plant conditions and optimize the nanomaterial treatment.



[Home](#) > [Books](#) > [Subjects](#) > [Engineering and technology](#) > [Security and Privacy Issues in IoT Devices and Sensor Networks](#)



Security and Privacy Issues in IoT Devices and Sensor Networks

1st Edition - October 15, 2020 • Imprint: Academic Press

Editors: Sudhir Kumar Sharma, Bharat Bhushan, Narayan C. Debnath • Language: English

Paperback ISBN: 9780128212554 • eBook ISBN: 9780128232224

Description

Security and Privacy Issues in IoT Devices and Sensor Networks investigates security breach issues in IoT and sensor networks, exploring various solutions. The book follows a two-fold approach, first focusing on the fundamentals and theory surrounding sensor networks and IoT security. It then explores practical solutions that can be implemented to develop security for these elements, providing case studies to enhance understanding. Machine learning techniques are covered, as well as other security paradigms, such as cloud security and cryptocurrency technologies. The book highlights how these techniques can be applied to identify attacks and vulnerabilities, preserve privacy, and enhance data security.

This in-depth reference is ideal for industry professionals dealing with WSN and IoT systems who want to enhance the security of these systems. Additionally, researchers, material developers and technology specialists dealing with the multifarious aspects of data privacy and security enhancement will benefit from the book's comprehensive information.

Table of contents

Actions for selected chapters

[Select all](#) / [Deselect all](#)



Export citations



● Full text access

Front Matter, Copyright, Contributors



Book chapter ○ Abstract only

Chapter 1 - Wireless sensor networks: Concepts, components, and challenges

Shweta Sinha and Priyanka Makkar

Pages 1-27



Purchase

[View chapter](#) >

[View abstract](#) v



Book chapter ○ Abstract only

Chapter 2 - Secure performance of emerging wireless sensor networks relying nonorthogonal multiple access

Dinh-Thuan Do, Anh-Tu Le and Narayan C. Debnath

Pages 29-41



Purchase

[View chapter](#) >

[View abstract](#) v



Book chapter ○ Abstract only

Chapter 3 - Security and privacy in wireless body sensor networks using lightweight cryptography scheme

A. Sivasangari, A. Ananthi, ... X. Mercilin Raajini

Pages 43-59

Chapter 4 - Impact of thermal effects on wireless body area networks and routing strategies

B. Banuselvasaraswathy and Vimalathithan Rathinasabapathy

Pages 61-85



Purchase

View chapter >

View abstract ✓



Book chapter ○ Abstract only

Chapter 5 - Four-way binary tree-based data gathering model for WSN

Gaurav Bathla, Rohit Kumar and Rajneesh Randhawa

Pages 87-103



Purchase

View chapter >

View abstract ✓



Book chapter ○ Abstract only

Chapter 6 - Routing protocols: Key security issues and challenges in IoT, ad hoc, and sensor networks

Chanchal Kumar and Shiv Prakash

Pages 105-132



Purchase

View chapter >

View abstract ✓



Book chapter ○ Abstract only

Chapter 7 - Fault tolerance of cluster-based nodes in IoT sensor networks with periodic mode of operation

Igor Kabashkin

Pages 133-152



Purchase

View chapter >

View abstract ✓

Chapter 8 - Lightweight cryptographic algorithms for resource-constrained IoT devices and sensor networks

Pulkit Singh, Bibhudendra Acharya and Rahul Kumar Chaurasiya

Pages 153-185

 Purchase [View chapter >](#) [View abstract ✓](#)

☐ Book chapter ☐ Abstract only

Chapter 9 - EELC: Energy-efficient lightweight cryptography for IoT networks

G. Rajesh, X. Mercilin Raajini, ... Lawrence Henesey

Pages 187-209

 Purchase [View chapter >](#) [View abstract ✓](#)

☐ Book chapter ☐ Abstract only

Chapter 10 - Blockchain as a solution for security attacks in named data networking of things

Sukriti Goyal, Nikhil Sharma, ... Bharat Bhushan

Pages 211-243

 Purchase [View chapter >](#) [View abstract ✓](#)

☐ Book chapter ☐ Abstract only

Chapter 11 - A novel privacy-preserving healthcare information sharing platform using blockchain

Mohammad Jaber, Amin Fakhereldine, ... Ramzi A. Haraty

Pages 245-261

☐ Book chapter ☐ Abstract only

Chapter 12 - Computational intelligent techniques for prediction of environmental attenuation of millimeter waves

Hitesh Singh, Vivek Kumar, ... Boncho Bonev

Pages 263-284



Purchase

View chapter >

View abstract ✓

☐ Book chapter ☐ Abstract only

Chapter 13 - The role of IoT in smart cities: Challenges of air quality mass sensor technology for sustainable solutions

Alok Pradhan and Bhuvan Unhelkar

Pages 285-307



Purchase

View chapter >

View abstract ✓

☐ Book chapter ☒ Full text access

Index

Pages 309-318



View PDF

View chapter >



Chapter 12 - Computational intelligent techniques for prediction of environmental attenuation of millimeter waves

Hitesh Singh ^a, Vivek Kumar ^a, Kumud Saxena ^a, Boncho Bonev ^b




^a Noida Institute of Engineering and Technology, Greater Noida, India

^b Technical University of Sofia, Sofia, Bulgaria

Available online 29 January 2021, Version of Record 29 January 2021.

 What do these dates mean?

Show less 

 Add to Mendeley  Share  Cite

<https://doi.org/10.1016/B978-0-12-821255-4.00012-2>

[Get rights and content](#)



[Home](#) > [Books](#) > [Subjects](#) > [Engineering and technology](#) > [Security and Privacy Issues in IoT Devices and Sensor Networks](#)



Security and Privacy Issues in IoT Devices and Sensor Networks

1st Edition - October 15, 2020 • Imprint: Academic Press

Editors: Sudhir Kumar Sharma, Bharat Bhushan, Narayan C. Debnath • Language: English

Paperback ISBN: 9780128212554 • eBook ISBN: 9780128232224

Description

Security and Privacy Issues in IoT Devices and Sensor Networks investigates security breach issues in IoT and sensor networks, exploring various solutions. The book follows a two-fold approach, first focusing on the fundamentals and theory surrounding sensor networks and IoT security. It then explores practical solutions that can be implemented to develop security for these elements, providing case studies to enhance understanding. Machine learning techniques are covered, as well as other security paradigms, such as cloud security and cryptocurrency technologies. The book highlights how these techniques can be applied to identify attacks and vulnerabilities, preserve privacy, and enhance data security.

This in-depth reference is ideal for industry professionals dealing with WSN and IoT systems who want to enhance the security of these systems. Additionally, researchers, material developers and technology specialists dealing with the multifarious aspects of data privacy and security enhancement will benefit from the book's comprehensive information.

Table of contents

Actions for selected chapters

[Select all](#) / [Deselect all](#)



Export citations



● Full text access

Front Matter, Copyright, Contributors



Book chapter ○ Abstract only

Chapter 1 - Wireless sensor networks: Concepts, components, and challenges

Shweta Sinha and Priyanka Makkar

Pages 1-27



Purchase

[View chapter](#) >

[View abstract](#) v



Book chapter ○ Abstract only

Chapter 2 - Secure performance of emerging wireless sensor networks relying nonorthogonal multiple access

Dinh-Thuan Do, Anh-Tu Le and Narayan C. Debnath

Pages 29-41



Purchase

[View chapter](#) >

[View abstract](#) v



Book chapter ○ Abstract only

Chapter 3 - Security and privacy in wireless body sensor networks using lightweight cryptography scheme

A. Sivasangari, A. Ananthi, ... X. Mercilin Raajini

Pages 43-59

Chapter 4 - Impact of thermal effects on wireless body area networks and routing strategies

B. Banuselvasaraswathy and Vimalathithan Rathinasabapathy

Pages 61-85



Purchase

[View chapter >](#)

[View abstract ✓](#)



Book chapter ☐ Abstract only

Chapter 5 - Four-way binary tree-based data gathering model for WSN

Gaurav Bathla, Rohit Kumar and Rajneesh Randhawa

Pages 87-103



Purchase

[View chapter >](#)

[View abstract ✓](#)



Book chapter ☐ Abstract only

Chapter 6 - Routing protocols: Key security issues and challenges in IoT, ad hoc, and sensor networks

Chanchal Kumar and Shiv Prakash

Pages 105-132



Purchase

[View chapter >](#)

[View abstract ✓](#)



Book chapter ☐ Abstract only

Chapter 7 - Fault tolerance of cluster-based nodes in IoT sensor networks with periodic mode of operation

Igor Kabashkin

Pages 133-152



Purchase

[View chapter >](#)

[View abstract ✓](#)

Chapter 8 - Lightweight cryptographic algorithms for resource-constrained IoT devices and sensor networks

Pulkit Singh, Bibhudendra Acharya and Rahul Kumar Chaurasiya

Pages 153-185

 Purchase [View chapter >](#) [View abstract ✓](#)

☐ Book chapter ☐ Abstract only

Chapter 9 - EELC: Energy-efficient lightweight cryptography for IoT networks

G. Rajesh, X. Mercilin Raajini, ... Lawrence Henesey

Pages 187-209

 Purchase [View chapter >](#) [View abstract ✓](#)

☐ Book chapter ☐ Abstract only

Chapter 10 - Blockchain as a solution for security attacks in named data networking of things

Sukriti Goyal, Nikhil Sharma, ... Bharat Bhushan

Pages 211-243

 Purchase [View chapter >](#) [View abstract ✓](#)

☐ Book chapter ☐ Abstract only

Chapter 11 - A novel privacy-preserving healthcare information sharing platform using blockchain

Mohammad Jaber, Amin Fakhereldine, ... Ramzi A. Haraty

Pages 245-261

☐ Book chapter ☐ Abstract only

Chapter 12 - Computational intelligent techniques for prediction of environmental attenuation of millimeter waves

Hitesh Singh, Vivek Kumar, ... Boncho Bonev

Pages 263-284



Purchase

View chapter >

View abstract ✓

☐ Book chapter ☐ Abstract only

Chapter 13 - The role of IoT in smart cities: Challenges of air quality mass sensor technology for sustainable solutions

Alok Pradhan and Bhuvan Unhelkar

Pages 285-307



Purchase

View chapter >

View abstract ✓

☐ Book chapter ☒ Full text access

Index

Pages 309-318



View PDF

View chapter >



Chapter 12 - Computational intelligent techniques for prediction of environmental attenuation of millimeter waves

Hitesh Singh ^a, Vivek Kumar ^a, Kumud Saxena ^a, Boncho Bonev ^b




^a Noida Institute of Engineering and Technology, Greater Noida, India

^b Technical University of Sofia, Sofia, Bulgaria

Available online 29 January 2021, Version of Record 29 January 2021.

 What do these dates mean?

Show less 

 Add to Mendeley  Share  Cite

<https://doi.org/10.1016/B978-0-12-821255-4.00012-2>

[Get rights and content](#)



[Home](#) > [Books](#) > [Subjects](#) > [Engineering and technology](#) > [Security and Privacy Issues in IoT Devices and Sensor Networks](#)



Security and Privacy Issues in IoT Devices and Sensor Networks

1st Edition - October 15, 2020 • Imprint: Academic Press

Editors: Sudhir Kumar Sharma, Bharat Bhushan, Narayan C. Debnath • Language: English

Paperback ISBN: 9780128212554 • eBook ISBN: 9780128232224

Description

Security and Privacy Issues in IoT Devices and Sensor Networks investigates security breach issues in IoT and sensor networks, exploring various solutions. The book follows a two-fold approach, first focusing on the fundamentals and theory surrounding sensor networks and IoT security. It then explores practical solutions that can be implemented to develop security for these elements, providing case studies to enhance understanding. Machine learning techniques are covered, as well as other security paradigms, such as cloud security and cryptocurrency technologies. The book highlights how these techniques can be applied to identify attacks and vulnerabilities, preserve privacy, and enhance data security.

This in-depth reference is ideal for industry professionals dealing with WSN and IoT systems who want to enhance the security of these systems. Additionally, researchers, material developers and technology specialists dealing with the multifarious aspects of data privacy and security enhancement will benefit from the book's comprehensive information.

Table of contents

Actions for selected chapters

[Select all](#) / [Deselect all](#)



Export citations



● Full text access

Front Matter, Copyright, Contributors



Book chapter ○ Abstract only

Chapter 1 - Wireless sensor networks: Concepts, components, and challenges

Shweta Sinha and Priyanka Makkar

Pages 1-27



Purchase

[View chapter](#) >

[View abstract](#) v



Book chapter ○ Abstract only

Chapter 2 - Secure performance of emerging wireless sensor networks relying nonorthogonal multiple access

Dinh-Thuan Do, Anh-Tu Le and Narayan C. Debnath

Pages 29-41



Purchase

[View chapter](#) >

[View abstract](#) v



Book chapter ○ Abstract only

Chapter 3 - Security and privacy in wireless body sensor networks using lightweight cryptography scheme

A. Sivasangari, A. Ananthi, ... X. Mercilin Raajini

Pages 43-59

Chapter 4 - Impact of thermal effects on wireless body area networks and routing strategies

B. Banuselvasaraswathy and Vimalathithan Rathinasabapathy

Pages 61-85



Purchase

View chapter >

View abstract ✓



Book chapter ○ Abstract only

Chapter 5 - Four-way binary tree-based data gathering model for WSN

Gaurav Bathla, Rohit Kumar and Rajneesh Randhawa

Pages 87-103



Purchase

View chapter >

View abstract ✓



Book chapter ○ Abstract only

Chapter 6 - Routing protocols: Key security issues and challenges in IoT, ad hoc, and sensor networks

Chanchal Kumar and Shiv Prakash

Pages 105-132



Purchase

View chapter >

View abstract ✓



Book chapter ○ Abstract only

Chapter 7 - Fault tolerance of cluster-based nodes in IoT sensor networks with periodic mode of operation

Igor Kabashkin

Pages 133-152



Purchase

View chapter >

View abstract ✓

Chapter 8 - Lightweight cryptographic algorithms for resource-constrained IoT devices and sensor networks

Pulkit Singh, Bibhudendra Acharya and Rahul Kumar Chaurasiya

Pages 153-185

 Purchase [View chapter >](#) [View abstract v](#)

☐ Book chapter ☐ Abstract only

Chapter 9 - EELC: Energy-efficient lightweight cryptography for IoT networks

G. Rajesh, X. Mercilin Raajini, ... Lawrence Henesey

Pages 187-209

 Purchase [View chapter >](#) [View abstract v](#)

☐ Book chapter ☐ Abstract only

Chapter 10 - Blockchain as a solution for security attacks in named data networking of things

Sukriti Goyal, Nikhil Sharma, ... Bharat Bhushan

Pages 211-243

 Purchase [View chapter >](#) [View abstract v](#)

☐ Book chapter ☐ Abstract only

Chapter 11 - A novel privacy-preserving healthcare information sharing platform using blockchain

Mohammad Jaber, Amin Fakhereldine, ... Ramzi A. Haraty

Pages 245-261

☐ Book chapter ☐ Abstract only

Chapter 12 - Computational intelligent techniques for prediction of environmental attenuation of millimeter waves

Hitesh Singh, Vivek Kumar, ... Boncho Bonev

Pages 263-284



Purchase

View chapter >

View abstract ✓

☐ Book chapter ☐ Abstract only

Chapter 13 - The role of IoT in smart cities: Challenges of air quality mass sensor technology for sustainable solutions

Alok Pradhan and Bhuvan Unhelkar

Pages 285-307



Purchase

View chapter >

View abstract ✓

☐ Book chapter ☒ Full text access

Index

Pages 309-318



View PDF

View chapter >



Chapter 12 - Computational intelligent techniques for prediction of environmental attenuation of millimeter waves

Hitesh Singh ^a, Vivek Kumar ^a, Kumud Saxena ^a, Boncho Bonev ^b




^a Noida Institute of Engineering and Technology, Greater Noida, India

^b Technical University of Sofia, Sofia, Bulgaria

Available online 29 January 2021, Version of Record 29 January 2021.

 What do these dates mean?

Show less 

 Add to Mendeley  Share  Cite

<https://doi.org/10.1016/B978-0-12-821255-4.00012-2>

[Get rights and content](#)

Fungi Bio-prospects in Sustainable Agriculture, Environment and Nano-technology

Volume 1: Fungal Diversity of Sustainable Agriculture

Fungi bio-prospects in sustainable agriculture, environment and nanotechnology is a three-volume series that has been designed to explore the huge potential of the many diverse applications of fungi to human life. The series unveils the latest developments and scientific advances in the study of the

[See all description...](#)



Author(s) [Sharma, Vijay Kumar](#) • [Shah, Phd. Maulin P.](#) • [Parmar, Shobhika](#)

Publisher: [Academic Press](#)

Pub. Date: 2020

pages: 701

Language: English

ISBN: 978-0-12-821394-0

eISBN: 978-0-12-821395-7




Fungi Bio-Prospects in Sustainable Agriculture, Environment and Nano-Technology

Volume 1: Fungal Diversity of Sustainable Agriculture


2021, Pages 285-313



Chapter 11 - Prospect of biofuel production by fungus

Arpitha Ramachandraiah^{1 a}, Juhi Kaushik^{1 a}, Lavanya Gowda^{1 a},
Premchand Subhash Chigadannavar^{1 a}, Ramya Krishnappa^{1 a}, Sandeep Venkatesh^{1 a},
Sheersha Sivadas^{1 a}, Sneha Judith^{1 a}, Unni Maya Ramesh^{1 a}, Zeba Quadri^{1 a},
Priyadarshini Dey^{1 a} , Mahendra Chinthala^{2 a}, Deepak Gola^{3 a}, Nitin Chauhan^{4 a},
Randhir Kumar Bharti^{5 a}

Show more 

 Add to Mendeley  Share  Cite

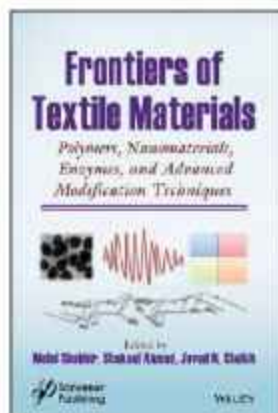
<https://doi.org/10.1016/B978-0-12-821394-0.00011-1> 

[Get rights and content](#) 

Chapter Detail:

Abstract

Fungus is a lucrative option and has received much attention in biofuel production of bioethanol, biodiesel and biogas. Bioethanol is obtained when lignocellulosic biomass (agriculture waste) is saccharified into a mixture of sugars by fungal assisted enzymatic pretreatment. Further, several oleaginous fungi such as Zygomycetes species are valuable feedstock for biodiesel production, as they are rich in oleic and palmitic acid. Apart from this, anaerobic fungus possesses an arsenal of extracellular multienzyme complexes that improve the digestion of various biomass for biogas production. One of the latest developments in the biofuel sector has been the fungal based microbial fuel cell technology that has the combined advantage of wastewater treatment and electricity generation. Thus, this review is a compilation of all the biofuels that can be obtained from fungus from waste materials and wastewater.



Frontiers of Textile Materials: Polymers, Nanomaterials, Enzymes, and Advanced Modification Techniques



Mohd Shabbir (Editor), Shakeel Ahmed (Editor), Javed N. Sheikh (Editor)

ISBN: 978-1-119-62037-2 | May 2020 | 384 pages

E-Book

Starting at \$190.00

Print

Starting at \$236.95

O-Book



Hardcover

\$236.95

Read an Excerpt



Product Overview

Download Product Flyer

Description

The book "Frontiers and Textile Materials" will deal with the important materials that can be utilized for value-addition and functionalization of textile materials. The topics covered in this

Selected type: **Hardcover**

Quantity

— 1 +

Your Price:

\$236.95

Add to Cart

Request Digital Evaluation Copy

Table of Contents

Preface xv

1 Introduction to Textiles and Finishing Materials 1

Mohd Shabbir and Javed N. Sheikh

2 Polymers for Textile Production 13

Mohammad Tajul Islam, Md. Mostafizur Rahman and Nur-Us-Shafa Mazumder

3 Advances in Polymer Coating for Functional Finishing of Textiles 61

Asma Bouasria, Ayoub Nadi, Aicha Boukhriss, Hassan Hannache, Omar Cherkaoui and Said Gmouh

4 Functional Finishing of Textiles with β -Cyclodextrin 87

Aminoddin Haji

5 Synthesis of Nanomaterials and Their Applications in Textile Industry 117

Rizwan Arif, Sapana Jadoun and Anurakshee Verma

6 Modification of Textiles via Nanomaterials and Their Applications 135

Sapana Jadoun, Anurakshee Verma and Rizwan Arif

7 UV Protection via Nanomaterials 153

Kunal Singha, Subhankar Maity and Pintu Pandit

8 Synthesis, Characterization, and Application of Modified Textile Nanomaterials 167

Anurakshee Verma, Rizwan Arif and Sapana Jadoun

9 Biomaterials-Based Nanogenerator: Futuristic Solution for Integration Into Smart Textiles 189

S. Wazed Ali, Satyaranjan Bairagi and Pramod Shankar

10 Textiles in Solar Cell Applications 203

Khursheed Ahmad

11 Multifunctionalizations of Textile Materials Highlighted by Unconventional Dyeing 219

Vasilica Popescu

12 Advanced Dyeing or Functional Finishing 291

Kunal Singha, Subhankar Maity and Pintu Pandit

13 Plasma and Other Irradiation Technologies Application in Textile 309

Kartick K. Samanta, S. Basak and Pintu Pandit

14 Bio-Mordants in Conjunction With Sustainable Radiation Tools for Modification of Dyeing of Natural Fibers 335

Shahid Adeel, Shumaila Kiran, Tanvir Ahmad, Noman Habib, Kinza Tariq and Muhammad Hussaan

Chapter Detail:

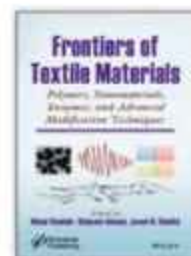
Chapter 1

Introduction to Textiles and Finishing Materials

Mohd Shabbir, Javed N. Sheikh

Book Editor(s): Mohd Shabbir, Shakeel Ahmed, Javed N. Sheikh

First published: 04 March 2020 | <https://doi.org/10.1002/9781119620396.ch1>



Frontiers of Textile Materials:
Polymers, Nanomaterials,
Enzymes, and Advanced
Modification Techniques



PDF



TOOLS



SHARE

Advertisement

Summary

Textile is one of the basic needs of the human being, and the modern human being has a lot of choices for their clothing. Textiles have various characteristics depending on the fibers they are made from, such as wool, silk, cotton, viscose, nylon, polyester, etc. and the finishing applied on them via materials such as finishing chemicals, nanoparticles, polymers, enzymes, etc. Thus, so many materials are available which can be utilized in the development of functional and smart textiles. In the era of technology (miniaturization of this world), flexible electronics based on textiles are gaining momentum. The chapter presents the emerging materials in the field of textiles with a major focus on the functionalization of textiles. In the next chapters of this book, all these are reviewed in great detail.

[Home](#) > [Book](#)



Removal of Emerging Contaminants Through Microbial Processes

Book | © 2021

Overview

Editors: [Maulin P Shah](#)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1041 1042 1043 1044 1045 1046 1047 1048 1049 1050 1051 1052 1053 1054 1055 1056 1057 1058 1059 1060 1061 1062 1063 1064 1065 1066 1067 1068 1069 1070 1071 1072 1073 1074 1075 1076 1077 1078 1079 1080 1081 1082 1083 1084 1085 1086 1087 1088 1089 1090 1091 1092 1093 1094 1095 1096 1097 1098 1099 1100 1101 1102 1103 1104 1105 1106 1107 1108 1109 1110 1111 1112 1113 1114 1115 1116 1117 1118 1119 1120 1121 1122 1123 1124 1125 1126 1127 1128 1129 1130 1131 1132 1133 1134 1135 1136 1137 1138 1139 1140 1141 1142 1143 1144 1145 1146 1147 1148 1149 1150 1151 1152 1153 1154 1155 1156 1157 1158 1159 1160 1161 1162 1163 1164 1165 1166 1167 1168 1169 1170 1171 1172 1173 1174 1175 1176 1177 1178 1179 1180 1181 1182 1183 1184 1185 1186 1187 1188 1189 1190 1191 1192 1193 1194 1195 1196 1197 1198 1199 1200 1201 1202 1203 1204 1205 1206 1207 1208 1209 1210 1211 1212 1213 1214 1215 1216 1217 1218 1219 1220 1221 1222 1223 1224 1225 1226 1227 1228 1229 1230 1231 1232 1233 1234 1235 1236 1237 1238 1239 1240 1241 1242 1243 1244 1245 1246 1247 1248 1249 1250 1251 1252 1253 1254 1255 1256 1257 1258 1259 1260 1261 1262 1263 1264 1265 1266 1267 1268 1269 1270 1271 1272 1273 1274 1275 1276 1277 1278 1279 1280 1281 1282 1283 1284 1285 1286 1287 1288 1289 1290 1291 1292 1293 1294 1295 1296 1297 1298 1299 1300 1301 1302 1303 1304 1305 1306 1307 1308 1309 1310 1311 1312 1313 1314 1315 1316 1317 1318 1319 1320 1321 1322 1323 1324 1325 1326 1327 1328 1329 1330 1331 1332 1333 1334 1335 1336 1337 1338 1339 1340 1341 1342 1343 1344 1345 1346 1347 1348 1349 1350 1351 1352 1353 1354 1355 1356 1357 1358 1359 1360 1361 1362 1363 1364 1365 1366 1367 1368 1369 1370 1371 1372 1373 1374 1375 1376 1377 1378 1379 1380 1381 1382 1383 1384 1385 1386 1387 1388 1389 1390 1391 1392 1393 1394 1395 1396 1397 1398 1399 1400 1401 1402 1403 1404 1405 1406 1407 1408 1409 1410 1411 1412 1413 1414 1415 1416 1417 1418 1419 1420 1421 1422 1423 1424 1425 1426 1427 1428 1429 1430 1431 1432 1433 1434 1435 1436 1437 1438 1439 1440 1441 1442 1443 1444 1445 1446 1447 1448 1449 1450 1451 1452 1453 1454 1455 1456 1457 1458 1459 1460 1461 1462 1463 1464 1465 1466 1467 1468 1469 1470 1471 1472 1473 1474 1475 1476 1477 1478 1479 1480 1481 1482 1483 1484 1485 1486 1487 1488 1489 1490 1491 1492 1493 1494 1495 1496 1497 1498 1499 1500 1501 1502 1503 1504 1505 1506 1507 1508 1509 1510 1511 1512 1513 1514 1515 1516 1517 1518 1519 1520 1521 1522 1523 1524 1525 1526 1527 1528 1529 1530 1531 1532 1533 1534 1535 1536 1537 1538 1539 1540 1541 1542 1543 1544 1545 1546 1547 1548 1549 1550 1551 1552 1553 1554 1555 1556 1557 1558 1559 1560 1561 1562 1563 1564 1565 1566 1567 1568 1569 1570 1571 1572 1573 1574 1575 1576 1577 1578 1579 1580 1581 1582 1583 1584 1585 1586 1587 1588 1589 1590 1591 1592 1593 1594 1595 1596 1597 1598 1599 1600 1601 1602 1603 1604 1605 1606 1607 1608 1609 1610 1611 1612 1613 1614 1615 1616 1617 1618 1619 1620 1621 1622 1623 1624 1625 1626 1627 1628 1629 1630 1631 1632 1633 1634 1635 1636 1637 1638 1639 1640 1641 1642 1643 1644 1645 1646 1647 1648 1649 1650 1651 1652 1653 1654 1655 1656 1657 1658 1659 1660 1661 1662 1663 1664 1665 1666 1667 1668 1669 1670 1671 1672 1673 1674 1675 1676 1677 1678 1679 1680 1681 1682 1683 1684 1685 1686 1687 1688 1689 1690 1691 1692 1693 1694 1695 1696 1697 1698 1699 1700 1701 1702 1703 1704 1705 1706 1707 1708 1709 1710 1711 1712 1713 1714 1715 1716 1717 1718 1719 1720 1721 1722 1723 1724 1725 1726 1727 1728 1729 1730 1731 1732 1733 1734 1735 1736 1737 1738 1739 1740 1741 1742 1743 1744 1745 1746 1747 1748 1749 1750 1751 1752 1753 1754 1755 1756 1757 1758 1759 1760 1761 1762 1763 1764 1765 1766 1767 1768 1769 1770 1771 1772 1773 1774 1775 1776 1777 1778 1779 1780 1781 1782 1783 1784 1785 1786 1787 1788 1789 1790 1791 1792 1793 1794 1795 1796 1797 1798 1799 1800 1801 1802 1803 1804 1805 1806 1807 1808 1809 1810 1811 1812 1813 1814 1815 1816 1817 1818 1819 1820 1821 1822 1823 1824 1825 1826 1827 1828 1829 1830 1831 1832 1833 1834 1835 1836 1837 1838 1839 1840 1841 1842 1843 1844 1845 1846 1847 1848 1849 1850 1851 1852 1853 1854 1855 1856 1857 1858 1859 1860 1861 1862 1863 1864 1865 1866 1867 1868 1869 1870 1871 1872 1873 1874 1875 1876 1877 1878 1879 1880 1881 1882 1883 1884 1885 1886 1887 1888 1889 1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1913 1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925 1926 1927 1928 1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1940 1941 1942 1943 1944 1945 1946 1947 1948 1949 1950 1951 1952 1953 1954 1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045 2046 2047 2048 2049 2050 2051 2052 2053 2054 2055 2056 2057 2058 2059 2060 2061 2062 2063 2064 2065 2066 2067 2068 2069 2070 2071 2072 2073 2074 2075 2076 2077 2078 2079 2080 2081 2082 2083 2084 2085 2086 2087 2088 2089 2090 2091 2092 2093 2094 2095 2096 2097 2098 2099 2100 2101 2102 2103 2104 2105 2106 2107 2108 2109 2110 2111 2112 2113 2114 2115 2116 2117 2118 2119 2120 2121 2122 2123 2124 2125 2126 2127 2128 2129 2130 2131 2132 2133 2134 2135 2136 2137 2138 2139 2140 2141 2142 2143 2144 2145 2146 2147 2148 2149 2150 2151 2152 2153 2154 2155 2156 2157 2158 2159 2160 2161 2162 2163 2164 2165 2166 2167 2168 2169 2170 2171 2172 2173 2174 2175 2176 2177 2178 2179 2180 2181 2182 2183 2184 2185 2186 2187 2188 2189 2190 2191 2192 2193 2194 2195 2196 2197 2198 2199 2200 2201 2202 2203 2204 2205 2206 2207 2208 2209 2210 2211 2212 2213 2214 2215 2216 2217 2218 2219 2220 2221 2222 2223 2224 2225 2226 2227 2228 2229 2230 2231 2232 2233 2234 2235 2236 2237 2238 2239 2240 2241 2242 2243 2244 2245 2246 2247 2248 2249 2250 2251 2252 2253 2254 2255 2256 2257 2258 2259 2260 2261 2262 2263 2264 2265 2266 2267 2268 2269 2270 2271 2272 2273 2274 2275 2276 2277 2278 2279 2280 2281 2282 2283 2284 2285 2286 2287 2288 2289 2290 2291 2292 2293 2294 2295 2296 2297 2298 2299 2300 2301 2302 2303 2304 2305 2306 2307 2308 2309 2310 2311 2312 2313 2314 2315 2316 2317 2318 2319 2320 2321 2322 2323 2324 2325 2326 2327 2328 2329 2330 2331 2332 2333 2334 2335 2336 2337 2338 2339 2340 2341 2342 2343 2344 2345 2346 2347 2348 2349 2350 2351 2352 2353 2354 2355 2356 2357 2358 2359 2360 2361 2362 2363 2364 2365 2366 2367 2368 2369 2370 2371 2372 2373 2374 2375 2376 2377 2378 2379 2380 2381 2382 2383 2384 2385 2386 2387 2388 2389 2390 2391 2392 2393 2394 2395 2396 2397 2398 2399 2400 2401 2402 2403 2404 2405 2406 2407 2408 2409 2410 2411 2412 2413 2414 2415 2416 2417 2418 2419 2420 2421 2422 2423 2424 2425 2426 2427 2428 2429 2430 2431 2432 2433 2434 2435 2436 2437 2438 2439 2440 2441 2442 2443 2444 2445 2446 2447 2448 2449 2450 2451 2452 2453 2454 2455 2456 2457 2458 2459 2460 2461 2462 2463 2464 2465 2466 2467 2468 2469 2470 2471 2472 2473 2474 2475 2476 2477 2478 2479 2480 2481 2482 2483 2484 2485 2486 2487 2488 2489 2490 2491 2492 2493 2494 2495 2496 2497 2498 2499 2500 2501 2502 2503 2504 2505 2506 2507 2508 2509 2510 2511 2512 2513 2514 2515 2516 2517 2518 2519 2520 2521 2522 2523 2524 2525 2526 2527 2528 2529 2530 2531 2532 2533 2534 2535 2536 2537 2538 2539 2540 2541 2542 2543 2544 2545 2546 2547 2548 2549 2550 2551 2552 2553 2554 2555 2556 2557 2558 2559 2560 256

Bibliographic Information

Book Title

Removal of Emerging
Contaminants Through
Microbial Processes

Editors

Maulin P Shah

DOI

<https://doi.org/10.1007/978-981-15-5901-3>

Publisher

Springer Singapore

eBook Packages

Biomedical and Life Sciences,
Biomedical and Life Sciences
(R0)

Copyright Information

Springer Nature Singapore Pte
Ltd. 2021

Hardcover ISBN

978-981-15-5900-6
Published: 15 October 2020

Softcover ISBN

978-981-15-5903-7
Published: 16 October 2021

eBook ISBN

978-981-15-5901-3
Published: 14 October 2020

Edition Number

1

Number of Pages

IX, 542

Number of Illustrations

13 b/w illustrations, 48
illustrations in colour

Table of contents (26 chapters)

Front Matter

[Download chapter PDF](#) 

Pages i–ix

Aspects of Microbial Biofilms in Water Treatment

Riddha Dey, Richa Raghuwanshi

Pages 1–21

New Bioremediation Technologies to Remove Heavy Metals and Radionuclides

Shubhalakshmi Sengupta, Uttariya Roy, Shamik Chowdhary, Papita Das

Pages 23–45

Removal of Heavy Metals Using Bentonite Clay and Inorganic Coagulants

Amit K. Thakur, Rahul Kumar, Pranava Chaudhari, Ravi Shankar

Pages 47–69

Advanced Oxidation Processes for Wastewater Remediation: An Overview

Samreen Heena Khan, Virendra Kumar Yadav

Pages 71–93

Rhizoremediation of Heavy Metal- and Xenobiotic-Contaminated Soil: An Eco-Friendly Approach

Pramila Verma, Seema Rawat
Pages 95–113

Biotreatment of High-Salinity Wastewater: Current Methods and Future Directions

Yiyi Zhao, Xuming Zhuang, Shakeel Ahmad, Shihwu Sung, Shou-Qing Ni
Pages 115–131

Facing Lethal Impacts of Industrialization via Green and Sustainable Microbial Removal of Hazardous Pollutants and Nanobioremediation

Basma A. Omran
Pages 133–160

Wastewater Treatment Techniques: An Introduction

Mukesh Meena, Priyankaraj Sonigra, Garima Yadav, Tansukh Barupal
Pages 161–182

New Trends in Removing Heavy Metals from Industrial Wastewater Through Microbes

Mohammad Haris, Adnan Shakeel, Touseef Hussain, Gufran Ahmad, Moh. Sajid Ansari, Abrar Ahmad Khan
Pages 183–205

Biological Wastewater Treatment Technology: Advancement and Drawback

Ifra Zoomi, Harbans Kaur Kehri, Ovaïd Akhtar, Dheeraj Pandey, Uma Singh, Kanhaiya Lal Chaudhary et al.
Pages 207–216

Role of Extremophiles and Extremophilic Proteins in Industrial Waste Treatment

Sharmistha Tapadar, Deeksha Tripathi, Saurabh Pandey, Khyati Goswami, Arunima Bhattacharjee, Kunwali Das et al.
Pages 217–235

Biosorption of Carcinogenic Heavy Metals by Bacteria: Role and Mechanism

Ravi Chauhan, Hardi Patel, Seema Rawat
Pages 237–263

The Interest in Nanotechnology: A Step Towards Bioremediation

Komal Agrawal, Pradeep Verma
Pages 265–282

Sustainable Phycoremediation of Xenobiotics Polluted Water

Nour Sh. El-Gendy, Hussein N. Nassar, Khaled A. El-Tarabily, Synan F. AbuQamar
Pages 283–310

Fundamentals of Biosensor Application in Environmental Pollutant Monitoring

Vinay Patel, Rishi Pramod, Namita Khanna, Prajakta Pawar, Abhilasha Singh Mathuriya, Soumya Pandit
Pages 311–329

Sustainable Recovery of Resources from Industrial Wastewater: Trends in Biotechnology and Allied Industries

Muthusivaramapandian Muthuraj, Biswanath Bhunia, Abhijit Chatterjee
Pages 331–357

Accumulation and Detoxification of Metals by Plants and Microbes

Soma Nag, Swarup Biswas
Pages 359–372

Enzymatic Degradation of Industrial Wastewater Pollutants

Sama A. Al-Mutwalli, Seyda Korkut, Muhammet Samet Kilic, Derya Y. Imer
Pages 373–398

Exploring the Use of Biomixtures for the Removal of Structurally Different Pesticides

J. M. Saez, A. L. Bigliardo, E. E. Raimondo, G. E. Briceño, M. A. Polti, C. S. Benimeli
Pages 399–417

[Find a journal](#)

[Publish with us](#)

[Track your research](#)

[Search](#)



[Home](#) > [Removal of Emerging Contaminants Through Microbial Processes](#) > Chapter

Mechanistic Insight to Bioremediation of Hazardous Metals and Pesticides from Water Bodies by Microbes

Chapter | First Online: 15 October 2020

pp 467–487 | [Cite this chapter](#)



Removal of Emerging Contaminants Through Microbial Processes

[Priyadarshini Dey](#), [Deepak Gola](#), [Nitin Chauhan](#), [Randhir Kumar Bharti](#) & [Anushree Malik](#)

Access this chapter

Abstract

In the last few decades, there has been a surge in the hazardous chemicals contamination in the water bodies in various parts of India. Consequently, bioremediation of these hazardous chemicals by microorganisms has emerged as a lucrative option. Furthermore, advancement in the various physicochemical and robust molecular techniques such as 1D-SDS-PAGE followed by LC-MS/MS analysis as well as metabolite identification by ^1H -NMR has shed light on the various cellular strategies adopted by a microorganism for remediation of a cocktail of metals and pesticide that were either poorly highlighted or unexplained.

With this background the present chapter aims to understand the complete process of a metal or cocktail of multimetal and pesticide mixture remediation by microorganisms such as bacteria, fungus or algae at molecular level by proteomic and metabolomic techniques. Further the scale up of this bioremediation process by bioreactors would be detailed.



Book series

Lecture Notes in Civil Engineering

 [Editors](#)

About this book series

Lecture Notes in Civil Engineering (LNCE) publishes the latest developments in Civil Engineering—quickly, informally and in top quality. Though original research reported in proceedings and post-proceedings represents the core of LNCE, edited volumes of exceptionally high quality and interest may also be considered for publication. Volumes published in LNCE embrace all aspects and subfields of, as well as new challenges in, Civil Engineering. Topics in the series include:

— [show all](#)

Electronic ISSN

2366-2565

Print ISSN

2366-2557

Series Editor

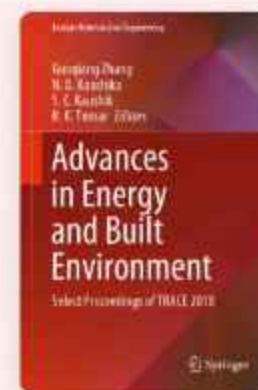
Marco di Prisco, Sheng-Hong Chen, Ioannis Vayas, Sanjay Kumar Shukla, Anuj Sharma, Nagesh Kumar, Chien Ming Wang, Zhen-Dong Cui, Xinzheng Lu

[Home](#) > [Advances in Energy and Built Environment](#) > [Conference paper](#)


Analysis, Design, and Comparison of Different Building-Integrated Photovoltaic Thermal (BIPVT) System for Indian Meteorological Condition

Conference paper | First Online: 30 June 2019

pp 145–157 | [Cite this conference paper](#)



[Advances in Energy and Built Environment](#)

[Amit Kumar Dash](#) , [Sanjay Agrawal](#), [Sanjay Gairola](#) & [Shweta Shukla](#)

[Access this chapter](#)



Book series

Lecture Notes in Civil Engineering

 [Editors](#)

About this book series

Lecture Notes in Civil Engineering (LNCE) publishes the latest developments in Civil Engineering—quickly, informally and in top quality. Though original research reported in proceedings and post-proceedings represents the core of LNCE, edited volumes of exceptionally high quality and interest may also be considered for publication. Volumes published in LNCE embrace all aspects and subfields of, as well as new challenges in, Civil Engineering. Topics in the series include:

— [show all](#)

Electronic ISSN

2366-2565

Print ISSN

2366-2557

Series Editor

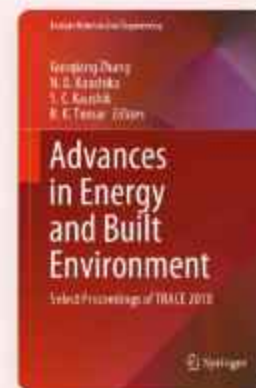
Marco di Prisco, Sheng-Hong Chen, Ioannis Vayas, Sanjay Kumar Shukla, Anuj Sharma, Nagesh Kumar, Chien Ming Wang, Zhen-Dong Cui, Xinzheng Lu

[Home](#) > [Advances in Energy and Built Environment](#) > [Conference paper](#)


Analysis, Design, and Comparison of Different Building-Integrated Photovoltaic Thermal (BIPVT) System for Indian Meteorological Condition

Conference paper | First Online: 30 June 2019

pp 145–157 | [Cite this conference paper](#)



[Advances in Energy and Built Environment](#)

[Amit Kumar Dash](#) , [Sanjay Agrawal](#), [Sanjay Gairola](#) & [Shweta Shukla](#)

[Access this chapter](#)



Handbook of Nanomaterials for Manufacturing Applications

A volume in Micro and Nano Technologies

Book • 2020



Edited by:
Chaudhery Mustansar Hussain

↓ About the book

Browse this book



By table of contents



Download all chapters



Share this book

Book description

Handbook of Nanomaterials for Manufacturing Applications covers the challenges and obstacles involved in using nanomaterials in manufacturing. In particular, the lack of informatio... [read full description](#)

Details

ISBN

978-0-12-821381-0

Language

English

Published

2020

Copyright

Copyright © 2020 Elsevier Inc. All rights reserved.

Imprint

Elsevier

DOI

<https://doi.org/10.1016/C2018-0-05040-9>

Editors

Chaudhery Mustansar Hussain

Department of Chemistry and EVSC, New Jersey

Institute of Technology, Newark, NJ, United States



Title page, Copyright, Dedication, Contents, List of contributors, Preface

- > *Section 1: Nanomaterial Modern Perspective in Industrial Manufacturing*
- > *Section 2: Engineered Nanomaterial in Surfaces and Coatings (Consumer Products)*
- > *Section 3: Engineered nanomaterial in textiles industry*
- > *Section 4: Engineered nanomaterial in sports industry*
- > *Section 5: Engineered nanomaterial in construction industry*
- > *Section 6: Engineered nanomaterial and additive manufacturing*
- > *Section 7: Nanomaterial in electronics*
- > *Section 8: Safety risk commercialization of nanomaterials*
- > *Section 9: Green and sustainable future with nanomaterial*



Index

Pages 493-507



[View PDF](#)

[View chapter](#) >



Chapter 10 - Engineered nanomaterials: scope in today's textile industry



Mohd Shabbir, Manish Kaushik

Department of Chemistry, Noida Institute of Engineering and Technology (NIET), Greater
Noida, India

Available online 17 April 2020, Version of Record 17 April 2020.

 What do these dates mean?

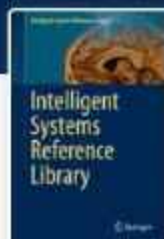
Show less ^

+ Add to Mendeley  Share  Cite

<https://doi.org/10.1016/B978-0-12-821381-0.00010-7>

[Get rights and content](#)

 [Full text access](#)



Book series

Intelligent Systems Reference Library

 [Editors](#)

About this book series

The aim of this series is to publish a Reference Library, including novel advances and developments in all aspects of Intelligent Systems in an easily accessible and well structured form. The series includes reference works, handbooks, compendia, textbooks, well-

structured r
knowledge a
theory, appli
as engineeri
physics and
intelligent sy

Electronic ISSN

1868-4408

Print ISSN

1868-4394

Series Editor

Janusz Kacprzyk, Lakhmi C. Jain

id
covers the
lines such
healthcare,
ern
ial

[Home](#) > [Internet of Things and Big Data Applications](#) > Chapter

An Emerging Approach to Intelligent Techniques—Soft Computing and Its Application

Chapter | First Online: 25 February 2020

pp 171–182 | [Cite this chapter](#)



**Internet of Things and Big Data
Applications**

[Pankaj Kumar](#)  & [S. K. Singh](#)

Access this chapter

Abstract

Over the past decade, artificial intelligence (AI) has appeared in high-tech labs, and people use it daily without feeling it. For example, current calculations of power technologies and flexible computing in other areas related to digital products, many applications that increase the contribution of artificial intelligence, are flexible computing technologies based on these problems, the medicine, biology, industry, manufacturing described as security, education, virtual environment. We was particularly encouraged. Support for the provision of new ideas and/or theoretical studies on soft computing technology, interdisciplinary research, real-world experimental application problems and flexible computer system design descriptions, diverse in development their new analytical structure Introduce the document Encourage a soft computing technology that is particularly practical. It provides an overview of the disciplines of Artificial Intelligence with respect to Soft Computing, and presents the benefits of soft computing over traditional hard computer technologies and their disadvantages.