



ScienceDirect®



Development in Wastewater Treatment Research and Processes

Bioelectrochemical Systems for Wastewater Management

Book • 2023

Edited by:

Maulin P. Shah, Susana Rodriguez-Couto, ... Achlesh Daverey



Browse book content



About the book



Search in this book

Search in this book



Table of contents

Full text access

Front Matter, Copyright, Contributors

Book chapter Full text access

FEEDBACK

Chapter 1 - Microalgal mediated bioelectricity generation and concomitant value-added products recovery from wastewater treatment in the bioelectrochemical system: Current status and future perspectives

Prathap Somu and Subhankar Paul

Pages 1-16

 [Download PDF](#) [View abstract](#) ▾

Book chapter  [Full text access](#)

Chapter 2 - Algal microbial fuel cell: An innovative and accessible approach

Komal Agrawal and Pradeep Verma

Pages 17-30

 [Download PDF](#) [View abstract](#) ▾

Book chapter  [Full text access](#)

Chapter 3 - Key role of microorganisms in industrial wastewater treatment

Nahid Siddiqui and Praveen Dahiya

Pages 31-47

 [Download PDF](#) [View abstract](#) ▾

Book chapter  [Full text access](#)

Chapter 4 - Membrane-integrated BES for wastewater reclamation

Vandana Gupta

Pages 49-60

 [Download PDF](#) [View abstract](#) ▾

Book chapter  [Full text access](#)

Chapter 5 - Wastewater remediation for reuse through emerging technologies

Mir Sahidul Ali, Jonathan Tersur Orasugh, ... Dipankar Chattopadhyay

Pages 61-77

[!\[\]\(cead67df4d82d6c83effe4f8699a7d8f_img.jpg\) Download PDF](#)[View abstract ▾](#)

Book chapter  Full text access

Chapter 6 - Bioelectrochemical systems: Understanding the basics and overcoming the challenges

Neha Tavker and Nakul Kumar

Pages 79-98

[!\[\]\(cbe2492b119e39e02a1dab2af4a4b296_img.jpg\) Download PDF](#)[View abstract ▾](#)

Book chapter  Full text access

Chapter 7 - Emerging trends of cyanobacteria-based microbial fuel cells as an alternative energy source

K.P.A. Imanthi, D.A.T. Madusanka, ... F.S. Idroos

Pages 99-119

[!\[\]\(0d5ec72f61334709c3fc9450209b754f_img.jpg\) Download PDF](#)[View abstract ▾](#)

Book chapter  Full text access

Chapter 8 - Bioelectrochemical systems: Basic concepts and types

Moupriya Nag, Dibyajit Lahiri, ... Rina Rani Ray

Pages 121-132

[!\[\]\(28f72b996fc97883dfd9d4e8b1b16b4e_img.jpg\) Download PDF](#)[View abstract ▾](#)

Book chapter  Full text access

Chapter 9 - Anode modification: An approach to improve power generation in microbial fuel cells (MFCs)

Gini Rani, Vijay Jaswal and K.N. Yogalakshmi

Pages 133-152

[!\[\]\(a25a22d88c5882f4a20f36103df86562_img.jpg\) Download PDF](#)[View abstract ▾](#)

Book chapter  Full text access

Chapter 10 - Influence of operational parameters on the performance of microbial fuel cells

Sanchita Bipin Patwardhan, Rujul Deolikar, ... Soumya Pandit

Pages 153-189

 [Download PDF](#)  [View abstract](#)

Book chapter  [Full text access](#)

Chapter 11 - Development of bioelectrochemical systems integrated nanocomposite membranes for wastewater management

Vishnu Manirethan, Neethu Shajan, ... Arindam Sinharoy

Pages 191-217

 [Download PDF](#)  [View abstract](#)

Book chapter  [Full text access](#)

Chapter 12 - Industrial wastewater treatment using bioelectrochemical systems and the potential for energy recovery

Manoj Kumar, Arindam Sinharoy, ... Khwairakpam Sanayaima Singh

Pages 219-238

 [Download PDF](#)  [View abstract](#)

Book chapter  [Full text access](#)

Chapter 13 - Microbes and wastewater treatment

Vasant Kumar, Rutika Sehgal and Reena Gupta

Pages 239-255

 [Download PDF](#)  [View abstract](#)

Book chapter  [Full text access](#)

Chapter 14 - Challenges in the scale-up of MES for wastewater treatment

Jonathan Tersur Orasugh, Baba Gabi, ... Dipankar Chattopadhyay

Pages 257-276

 [Download PDF](#)  [View abstract](#)

Book chapter  Full text access

Index

Pages 277-283

 Download PDF

About the book

Description

Industrial wastewater contains a large variety of compounds, such as hazardous organic pollutants, heavy metals, salts and nutrients, which makes its treatment challenging. On the other hand, the sewage treatment with existing technologies is not cost-effective due to high energy demand and contributes to greenhouse gas emission. Thus, the use of conventional water treatment methods is neither sustainable nor always effective. In this sense, BESs has emerged as a promising

[Show more ▾](#)

Key Features

Discusses the fundamentals of biological wastewater treatment and bio-electrochemical systems, advantages, limitations and promising solutions of different types of energy recovery options from wastewater

Presents the recent trends and developments in BES for achieving the sustainable wastewater treatment

[Show more ▾](#)

Details

ISBN

978-0-323-88505-8

Language

English

Published

2023

Copyright

Copyright © 2023 Elsevier Inc. All rights reserved.

Imprint

Elsevier

DOI

<https://doi.org/10.1016/C2020-0-03289-5>

Editors

Maulin P. Shah

Industrial Wastewater Research Lab, Division of Applied & Environmental Microbiology Enviro Technology Limited, Ankleshwar, Gujarat, India

Susana Rodriguez-Couto

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

Ashok Kumar Nadda

Department of Biotechnology and Bioinformatics, Jaypee University of Information Technology, Waknaghat, Himachal Pradesh, India

Achlesh Daverey

School of Environment and Natural Resources, Doon University, Dehradun, Uttarakhand, India