1. Record Nr. UNINA9910299410603321

Titolo	Microbial Fuel Cell : A Bioelectrochemical System that Converts Waste to Watts / / edited by Debabrata Das
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2018
ISBN	3-319-66793-9
Edizione	[1st ed. 2018.]
Descrizione fisica	1 online resource (XIX, 506 p. 111 illus., 17 illus. in color.)
Disciplina	363.7394 363.73946
Soggetti	Water - Pollution Renewable energy resources Water-supply Environmental engineering Biotechnology Biochemical engineering Electrochemistry Waste Water Technology / Water Pollution Control / Water Management / Aquatic Pollution Renewable and Green Energy Water Industry/Water Technologies Environmental Engineering/Biotechnology Biochemical Engineering
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	1. Introduction -- 2. Principles of microbial fuel cell for the power generation -- 3. Characteristics of microbes involved in microbial fuel cell -- 4. Microbial ecology of anodic biofilms: From species selection to microbial interactions -- 5. Anodic electron transfer mechanism in bioelectrochemical systems -- 6. Development of suitable anode materials for microbial fuel cells -- 7. Performances of separator and membraneless microbial fuel cell -- 8. Role of cathode catalyst in microbial fuel cell -- 9. Role of biocathodes in bioelectrochemical

systems -- 10. Physicochemical parameters governing microbial fuel cell performance -- 11. Reactor design for bioelectrochemical systems -- 12. Microfluidic microbial fuel cell: On-chip automated and robust method to generate energy -- 13. Diagnostic tools for the assessment of MFC -- 14. Modelling of reaction and transport in microbial fuel cells -- 15. Bioremediation and power generation from organic wastes using microbial fuel cell -- 16. Removal and recovery of metals by using bio-electrochemical system -- 17. Sediment microbial fuel cell and constructed wetland assisted with it: Challenges and future prospects -- 18. Fundamentals of microbial desalination cell -- 19. Biophotovoltaics: Conversion of light energy to bioelectricity through photosynthetic microbial fuel cell technology -- 20. Application of microbial fuel cell as a biosensor -- 21. Microbial fuel cell as alternate power tool: Potential and challenges -- 22. Microbially mediated electrosynthesis processes -- 23. Recent progress towards scaling up of MFCs -- 24. Scaling up of MFCs: Challenges and case studies -- 25. Challenges in microbial fuel cell and future scope -- Index.

Sommario/riassunto

This book represents a novel attempt to describe microbial fuel cells (MFCs) as a renewable energy source derived from organic wastes. Bioelectricity is usually produced through MFCs in oxygen-deficient environments, where a series of microorganisms convert the complex wastes into electrons via liquefaction through a cascade of enzymes in a bioelectrochemical process. The book provides a detailed description of MFC technologies and their applications, along with the theories underlying the electron transfer mechanisms, the biochemistry and the microbiology involved, and the material characteristics of the anode, cathode and separator. It is intended for a broad audience, mainly undergraduates, postgraduates, energy researchers, scientists working in industry and at research organizations, energy specialists, policymakers, and anyone else interested in the latest developments concerning MFCs. .