# Biogas Technology By Nijaguna

Biogas TechnologyNew Age International

Advances in Eco-fuels for Sustainable Environment presents the most recent developments in the field of environmentally friendly eco-fuels. Dr. Kalad Azad and his team of contributors analyze the latest bio-energy technologies and emission control strategies, while also considering other important factors, such as environmental sustainability and energy efficiency improvement. Coverage includes biofuel extraction and conversion technologies, the implementation of biotechnologies and system improvement methods in the process industries. This book will help readers develop a deeper understanding of the relevant concepts and solutions to global sustainability issues with the goal of achieving cleaner, more efficient energy. Energy industry practitioners, energy policymakers and government organizations, renewables researchers and academics will find this book extremely useful. Focuses on recent developments in the field of eco-fuels, applying concepts to various medium-large scale industries Considers the societal and environmental benefits, along with an analysis of technologies and research Includes contributions from industry experts and global case studies to demonstrate the application of the research and technologies discussed "Akashvani" (English) is a programme journal of ALL INDIA RADIO, it was formerly known as The Indian Listener. It used to serve the listener as a bradshaw of broadcasting ,and give listener the useful information in an interesting manner about programmes, who writes them, take part in them and produce them along with photographs of performing artists. It also contains the information of major changes in the policy and service of the organisation. The Indian Listener (fortnightly programme journal of AIR in English) published by The Indian State Broadcasting Service, Bombay, started on 22 December, 1935 and was the successor to the Indian Radio Times in English, which was published beginning in July 16 of 1927. From 22 August ,1937 onwards, it used to published by All India Radio, New Delhi. From 1950,it was turned into a weekly journal. Later, The Indian listener became "Akashvani" (English ) w.e.f. January 5, 1958. It was made fortnightly journal again w.e.f July 1,1983. NAME OF THE JOURNAL: AKASHVANI LANGUAGE OF THE JOURNAL: English DATE, MONTH & YEAR OF PUBLICATION: 23 JANUARY, 1983 PERIODICITY OF THE JOURNAL: Weekly NUMBER OF PAGES: 68 VOLUME NUMBER: Vol. LIV. No. 4 BROADCAST PROGRAMME SCHEDULE PUBLISHED (PAGE NOS): 34-66 ARTICLE: 1. Priorities of Rural Development 2. Technology for Rural Development 3. National Rural Employment Programme 4. Psycho-Social Aspects of the Rural Disadvantage 5. Meeting the Organisational Challenges 6. Agriculture Research: Recent Achievements 7. Khadi and Village Industries 8. The Role of Voluntary Agencies 9. Production Vs. Pollution 10. Mixed Economy In a Democracy 11. Health Education 12. Arms Race And Nuclear Energy 13. Penguins greet Second Antarctica Expedition 14. Asiad 82 in Retrospect

AUTHOR: 1. R .V . Swaminathan 2. Dr. B. T. Nijaguna 3. S. C. Varma 4. Dr. D. C. Muthayya 5. A. Raghotham Rao 6. Prof. L. N. Mondal 7. A. M. Thomas 8. Dr. John Augustine 9. M. Thirunavukkarasu 10. Dr. Raghuvir S. Mehta 11. V. N. Kakar 12. R. Raina 13. Dr. S. Z. Qasim and K. S. Jayaraman 14. M. K. Dharma Raja And V. V. Prasad Prasar Bharati Archives has the copyright in all matters published in this “AKASHVANI” and other AIR journals. For reproduction previous permission is essential.

Anaerobic digestion is a biochemical degradation process that converts complex organic material, such as animal manure, into methane and other byproducts. Part of the author's Wastewater Microbiology series, Microbiology of Anareboic Digesters eschews technical jargon to deliver a practical, how-to guide for wastewater plant operators.

This handbook features best practices for integrating waste to energy and related technologies into the operations of various industries. It discusses current technologies, presents a conceptual example of municipal solid waste planning, and provides commentary on waste-to-energy initiatives. The importance of appropriate infrastructure as well as flexibility and openness to technologies and business models is emphasized. The handbook—and its complementary compendium of 18 projects—aim to support the efforts of developing countries in Asia and the Pacific to deploy and scale up technologies relevant to the circular economy.

The global demand for energy is met mainly by fossil fuels. Their excessive and indiscriminate use, coupled with increasing demand for energy, will soon deplete their existing reserves. Therefore, it is extremely important to find alternative, environment-friendly, and ecologically sound sources of energy for meeting the present and future energy requirements. Biogas Technology: Towards Sustainable Development makes an attempt to explore the potential of utilizing biodegradable biomass as fuel and manure.

Since the publication of "The coconut palm - A monograph" in 1960, considerable information has been accrued on the crop through work at research institutes, international organisations and development agencies. Although coconut cultivation is spread over 93 countries, providing employment and creating livelihood opportunities to 64 million families around the globe, smallholder coconut farmers are now facing numerous challenges. The wide gap between the potential and actual yield is a major concern, and as such it is necessary to disseminate knowledge in order to implement research findings. Coconut research in India, one of the leading coconut producing countries, is celebrating its centenary, making this an opportune time to review the research and development advances and the relevant technologies. This detailed, comprehensive book covers all aspects of coconut, from the origins to cultivation, breeding, physiology and value addition, as well as subjects of topical interest like nutrition and health, biotechnology, and climate change and carbon sequestration. Written by leading experts in the fields it emphasises that the

livelihood of the small coconut landholders is the ultimate aim of scientists and developmental agencies, and outlines various important strategies to make coconut farming more remunerative globally. It discusses work in all the major coconut growing countries and outlines suggestions for international cooperation. Research work on the crop is comparatively difficult because of its perennial nature, longevity, height, long juvenile phase, large sized nuts, cross pollination and seed propagation. As these special features necessitate greater investment of resources, time and land, it is all the more imperative that research is not duplicated and the information and experience becoming available around the world is shared so that it can be fully utilised. In this context periodic publications, compiling all the available information on coconut assume greater significance. This book is therefore of great value to researchers, students, extension workers, developmental agencies and progressive farmers.

This book covers the state-of-the-art advances in several areas of energy, combustion, power, propulsion, and environment, focusing on the use of conventional and alternative fuels. It presents novel developments in the areas of biofuels and value added products from various feedstock materials, along with thermal management, emission control and environmental issues from energy conversion. Written by internationally renowned experts, the chapters in this volume cover the latest fundamental and applied research innovations on cleaner energy utilization for a wide range of devices extending from micro scale energy conversion to hypersonic propulsion using hydrocarbon fuels. The book will be useful as a ready reference for managers and practicing and research engineers, as well as graduate students and research organizations and institutions.

Inhaltsangabe:Introduction: It is well known that freshwater is finite and an indispensable resource for any living organism on Earth. Inappropriately, during the last decades, anthropogenic activities expansion, in parallel with population growth, has been the main cause of the deterioration of water quality. According to UNESCO the world s population is growing nearby 80 million people each year, which suggests an increasing of freshwater demand of about 64 billion m3 a year. Likewise, the demographic estimations indicate that 90% of the 3 billion people, who are expected to be added to the world population in 2050, will be living in developing countries, mainly in regions that are already by this time in water stress. However, in order to relate the increasing demand for water, not only the demographic aspect should be taken into account but also economic and social aspects must be considered. The economic expansion affects water since there is an increase in the number of consumers as well as modifications in their consumption habits, in a way that services are offered, goods are produced and transported. The social aspect points out to individual rather than collective actions mainly considering poverty, education, culture, lifestyle and consumption patterns. Obviously the demand and the importance for satisfactory sanitation conditions become indispensable. The World Health Organization (WHO) and The United Nations Children's Fund (UNICEF) report that 2.5 billion people still have a lack of access to improved sanitation, including 1.2 billion people who have no facilities at all. While in developed areas the sanitation coverage achieves 99%, in developing regions this number is around 53%. Furthermore, in Latin America and the Caribbean the coverage sanitation is approximately 79%. In Brazil, target area of this study, only 55.2% of the municipalities are covered by a sewage collection system. In this manner, coverage sanitation does not mean necessarily that the wastewater is treated. Hence, the wastewater must be followed by a treatment system (removal of physical, chemical and biological compounds) in order to achieve pollution mitigation targets for the environmental quality and human health and welfare. According to UNESCO more than 80% of

the domestic wastewater in developing countries is discharged untreated, polluting rivers, lakes and coastal areas. Therefore, a large number of technologies have been developed with the intention [...]

This book focuses on biogas production by anaerobic digestion, which is the most popular bioenergy technology of today. Using anaerobic digestion for the production of biogas is a sustainable approach that simultaneously also allows the treatment of organic waste. The energy contained in the substrate is released in the form of biogas, which can be employed as a renewable fuel in diverse industrial sectors. Although biogas generation is considered an established process, it continues to evolve, e.g. by incorporating modifications and improvements to increase its efficiency and its downstream applications. The chapters of this book review the progress made related to feedstock, system configuration and operational conditions. It also addresses microbial pathways utilized, as well as storage, transportation and usage of biogas. This book is an up-to-date resource for scientists and students working on improving biogas production.

The Distinguishing Feature Of The Book Is Its Exhaustive Coverage Encompassing Theory And Practical Aspects On Items Like The Status Of Biogas Technology, Different Types Of Biogas Plants And Their Suitability For A Given Situation, Their Design Aspects, Sizing And Scaling Of Biogas Plants Which Are Illustrated With Calculations And Working Drawings. In Addition, Constructional Aspects, Cost Aspects, Diagnosis And Cure Of Faults During Operation And Details Of Utilisation Devices Are Detailed.

This book will appeal to those interested in Graeco-Roman historiography, and those with an interest in the Arabic, Early Christian and modern reception of ancient historiography. --

Waste Biorefinery: Integrating Biorefineries for Waste Valorisation provides the various options available for several renewable waste streams. The book includes scientific and technical information pertaining to the most advanced and innovative processing technologies used for the conversion of biogenic waste to biofuels, energy products and biochemicals. In addition, the book reports on recent developments and new achievements in the field of biochemical and thermo-chemical methods and the necessities and potential generated by different kinds of biomass in presumably more decentralized biorefineries. The book presents an assortment of case-studies from developing and developed countries pertaining to the use of sustainable technologies for energy recovery from different waste matrices. Advantages and limitations of different technologies are also discussed by considering the local energy demands, government policies, environmental impacts, and education in bioenergy. Provides information on the most advanced and innovative processes for biomass conversion Covers information on biochemical and thermo-chemical processes and products development on the principles of biorefinery Includes information on the integration of processes and technologies for the production of biofuels, energy products and biochemicals Demonstrates the application of various processes with proven case studies

More than 1.3 billion people worldwide lack access to electricity. Although extension of the electricity grid remains the preferred mode of electrification, off-grid electrification can offer a solution to such cases. Rural Electrification through Decentralised Off-grid Systems in Developing Countries provides a review of rural electrification experiences with an emphasis on off-grid electrification and presents business-related aspects including participatory arrangements, financing, and regulatory governance. Organized in three parts, Rural Electrification through Decentralised Off-grid Systems in Developing Countries provides comprehensive coverage and state-of-the art reviews which appraise the reader of the latest trend in the thinking. The first part presents the background information on electricity access, discusses the developmental implications of lack of electricity infrastructure and provides a review of alternative off-grid technologies. The second part presents a review of experiences from various regions (South Asia, China, Africa, South East Asia and South America). Finally,

the third part deals with business dimensions and covers participatory business models, funding challenges for electrification and regulatory and governance issues. Based on the research carried out under the EPSRC/ DfID funded research grant for off-grid electrification in South Asia, Rural Electrification through Decentralised Off-grid Systems in Developing Countries provides a multi-disciplinary perspective of the rural electrification challenge through off-grid systems. Providing a practical introduction for students, this is also a key reference for engineers and governing bodies working with off-grid electrification.

This book presents a review and in-depth analyses of improved biotechnological processes emphasizing critical aspects and challenges of lignocellulosic biomass conversion into biofuels and value-added products especially using extremophiles and recombinant microorganisms. The book specifically comprises extremophilic production of liquid and gaseous biofuels (bioethanol, biobutanol, biodiesel, biohydrogen, and biogas) as well as value added products (e.g. single cell protein, hydrocarbons, lipids, exopolysaccharides, and polyhydroxyalkanoates). The book also provides the knowledge on how to develop safe, more efficient, sustainable, and economical integrated processes for enhanced conversion of lignocellulosic feedstocks to liquid and gaseous biofuels. Finally the book describes how to perform the techno-economical and life-cycle assessments of new integrated processes involving extremophiles. These modeling exercises are critical in addressing any deficiencies associated with the demonstration of an integrated biofuels and value-added products production process at pilot scale as well as demonstration on the commercialization scale.

Can "green petroleum" reverse global warming and bring down highgasoline prices? Written in non-technical language for thelayperson, this book investigates and details how the oil and gasindustry can "go green" with new processes and technologies, thusbringing the world's most important industry closer toenvironmental and economic sustainability.

Reap the benefits of sludge The processing of wastewater sludge for use or disposal has been acontinuing challenge for municipal agencies. Yet, whensludge isproperly processed, the resulting nutrient-richproduct--biosolids--can be a valuable resource for agriculture andother uses. Wastewater Sludge Processing brings together a widebody of knowledge from the field to examine how to effectivelyprocess sludge to reap its benefits, yet protect publichealth. Presented in a format useful as both a reference for practicingenvironmental engineers and a textbook for graduatestudents, thisbook discusses unit operations used for processing sludge and theavailable methods for final disposition of the processed product.Topics discussed include sludge quantities and characteristics,thickening and dewatering, aerobicand anaerobic digestion, alkalinestabilization, composting, thermal drying and incineration, energyconsumption, and the beneficial use of biosolids. COMPREHENSIVE IN ITS COVERAGE, THE TEXT: * Describes new and emerging technologies as well as internationalmethods * Compares different types of sludge processing methods * Explains both municipal and industrial treatmenttechnologies Written by authors with decades of experience in the field,Wastewater Sludge Processing is an invaluable tool for anyoneplanning, designing, and implementing municipal wastewater sludgemanagement projects.

Progressive increases in consumer demands along with aggressive industrial consumption led the world to proximate resource depletion, weather changes, soil and air degradation and water quality deterioration. We now know that the paradigm of production at the expense of human condition is not sustainable. This book briefly

explains how we reached this situation and offers suggestions as to what can be done to overcome it. It invites the best entrepreneurial talent and scientific and technological know-how to develop a sustainable economy around sustainable communities, services, and sectors. A major obstacle previously identified by involved parties was the ability of accommodating for the emerging economic growth without causing harm to the environment, especially with resource depletion. This book provides the solution by creating a need to bring on a new revolution that preserves the rights of next generations to live in a healthy environment This Sustainability Revolution requires the integration of economic, environmental, and social factor as well as the practical aspects of implementing sustainability through green activities, which are discussed throughout the book. In this book, a globalization is proposed that encourages creativity and innovation towards sustainability. With this global sustainability approach (real globalization) both rich and poor will benefit from the global sustainability approach. This will close the gap between rich and poor. Developing countries could reap the benefit of current technology without undergoing many of the growing pains associated with development of these technologies. Governments are able to better work together towards common goals now that there is an advantage in cooperation, an improved ability to interact and coordinate, and a global awareness of issues. The book presents a sustainability roadmap to bring together various concepts, that have been dealt with independently by previous authors, and link them to establish the fundamental practical steps. The flow path and the direction for successful implementation of a sustainability roadmap are also discussed in detail in the book. For the first time, the authors use sustainable communities to create a better quality of life for residents while minimizing the use of the resources to meet current needs and ensure adequate resources for future generations. These green communities create new industries for the local economy and improve public health, which offers more hope for their citizens. Sustainable transportation, renewable energy, recycling, clean water, and urban forests help to make a more livable community and help to control the global climate change. They involve all citizens and incorporate local values into decision-making.

Engineering Design and Mathematical Modelling: Concepts and Applications consists of chapters that span the Engineering design and mathematical modelling domains. Engineering design and mathematical modelling are key tools/techniques in the Science, Technology and Innovation spheres. Whilst engineering design is concerned with the creation of functional innovative products and processes, mathematical modelling seeks to utilize mathematical principles and concepts to describe and control real world phenomena. Both of these can be useful tools for spurring and hastening progress in developing countries. They are also areas where Africa needs to ‘skill-up’ in order to build a technological base. The chapters in this book cover the relevant research trends in the fields of both engineering design and mathematical modelling. This book was originally published as a special issue of the African Journal of Science, Technology, Innovation and Development.

Frontiers in Bioenergy and Biofuels presents an authoritative and comprehensive overview of the possibilities for production and use of bioenergy, biofuels, and coproducts. Issues related to environment, food, and energy present serious challenges to the success and stability of nations. The challenge to provide energy to a rapidly increasing global population has made it imperative to find new technological routes to

increase production of energy while also considering the biosphere's ability to regenerate resources. The bioenergy and biofuels are resources that may provide solutions to these critical challenges. Divided into 25 discreet parts, the book covers topics on characterization, production, and uses of bioenergy, biofuels, and coproducts. Frontiers in Bioenergy and Biofuels provides an insight into future developments in each field and extensive bibliography. It will be an essential resource for researchers and academic and industry professionals in the energy field.

The book analyzes energy technologies, business models and policies to promote sustainable development. It proposes a set of recommendations for further activities and networking on access to energy and renewable energies and promotes an integrated approach to sustainable resource management. The book discusses access to energy, as a precondition for socio-economic progress. It depicts the global dimension of the challenge in terms of access to electricity and other forms of energy in developing countries. The three main interlinked topics related to energy and sustainable growth are separately discussed: appropriate technologies for modern energy services, business models for the development of new energy markets, and policies to support new energy systems. The description of activities and programmes of some public and private Italian stakeholders is also included.

We cordially invite you to attend 2013 International Conference on Frontiers of Environment, Energy and Bioscience (ICFEEB 2013), which will be held in Beijing, China during October 24–25, 2013. The main objective of ICFEEB 2013 is to provide a platform for researchers, engineers, academicians as well as industrial professionals from all over the world to present their research results and development activities in Environment, Energy and Bioscience. This conference provides opportunities for the delegates to exchange new ideas and experiences face to face, to establish business or research relations and to find global partners for future collaboration. ICFEEB 2013 received over 400 submissions which were all reviewed by at least two reviewers. As a result of our highly selective review process four hundred papers have been retained for inclusion in the ICFEEB 2013 proceedings, less than 40% of the submitted papers. The program of ICFEEB 2013 consists of invited sessions, and technical workshops and discussions covering a wide range of topics. This rich program provides all attendees with the opportunities to meet and interact with one another. We hope your experience is a fruitful and long lasting one. With your support and participation, the conference will continue its success for a long time. The conference is supported by many universities and research institutes. Many professors play an important role in the successful holding of the conference, so we would like to take this opportunity to express our sincere gratitude and highest respects to them. They have worked very hard in reviewing papers and making valuable suggestions for the authors to improve their work. We also would like to express our gratitude to the external reviewers, for providing extra help in the review process, and to the authors for contributing their research result to the conference. Special thanks go to our publisher DEStech Publications. At the same time, we also express our sincere thanks for the understanding and

support of every author. Owing to time constraints, imperfection is inevitable, and any constructive criticism is welcome. We hope you will have a technically rewarding experience, and use this occasion to meet old friends and make many new ones. Do not miss the opportunity to explore in Beijing, China. And do not forget to take a sample of the many and diverse attractions in the rest of the China. We wish all attendees an enjoyable scientific gathering in Beijing, China. We look forward to seeing all of you next year at the conference. The Conference Organizing Committees October 24–25, 2013 Beijing, China

Written as a practical introduction to biogas plant design and operation, this book fills a huge gap by presenting a systematic guide to this emerging technology -- information otherwise only available in poorly intelligible reports by US governmental and other official agencies. The author draws on teaching material from a university course as well as a wide variety of industrial biogas projects he has been involved with, thus combining didactical skill with real-life examples. Alongside biological and technical aspects of biogas generation, this timely work also looks at safety and legal aspects as well as environmental considerations.

Anaerobic digestion (AD) is one of the oldest biotechnological processes and originally referred to biomass degradation under anoxic conditions in both natural and engineered systems. It has been used for decades to treat various waste streams and to produce methane-rich biogas as an important energy carrier, and it has become a major player in electrical power production. AD is a popular, mature technology, and our knowledge about the influencing process parameters as well as about the diverse microbial communities involved in the process has increased dramatically over the last few decades. To avoid competition with food and feed production, the AD feedstock spectrum has constantly been extended to waste products either rich in recalcitrant lignocellulose or containing inhibitory substances such as ammonia, which requires application of various pre-treatments or specific management of the microbial resources. Extending the definition of AD, it can also convert gases rich in hydrogen and carbon dioxide into methane that can substitute natural gas, which opens new opportunities by a direct link to traditional petrochemistry. Furthermore, AD can be coupled with emerging biotechnological applications, such as microbial electrochemical technologies or the production of medium-chain fatty acids by anaerobic fermentation. Ultimately, because of the wide range of applications, AD is still a very vital field in science. This Special Issue highlights some key topics of this research field.

This book is intended for introducing the fundamen

This book draws together a small selection of full-length papers based on presentations given at the 27th European Biomass Conference and Exhibition held in Lisbon, Portugal in 2019. The topics covered, which reflect the breadth of the program of the EUBCE conference itself, include biomass sources, various aspects of technologies used for the conversion of biomass to bioproducts and bioenergy, as well as different approaches to assessing environmental impacts,

which include case studies based on different technologies in use in a range of countries.

We are delighted to introduce The Proceedings of the International Conference on Environmental Science and Sustainable Development in 2019. This conference has taken place with the theme “The Strengthening of Sustainable Development Goals (SDGs) in Southeast Asia”. Environmental problems are dynamics and complex that needs the analytical and decision making instruments which can accommodate these characteristics. Environmental science is an interdisciplinary science that delivered to understand complex and dynamic interactions in environmental systems. Studies in Environmental Sciences involves various fields of science which enable the formulation of efforts to solve environmental problems in a holistic and comprehensive way for its sustainability. Sustainable development is a dynamic process in environmental science that includes the process of utilizing natural resources, the direction of investment, the orientation of technological development and institutional change to address the environmental problems. The conference brought together a number of environmental experts from various disciplines, as well as practitioners, students and lecturers. Meanwhile, with a total of 38 papers, then all papers in this proceeding are divided into several sub-topics, i.e.: Ecosystem And Biodiversity Conservation; Environmental Planning And Management; Water And Waste Management; Governance, Culture, and Politics; Sustainable Energy And Renewable Energy; Spatial Planning And Regional Analysis; Community Engagement; Social Movement And Environmental; and Strengthening Of Sustainable Development Goals. We hope that the valuable work and discussion during this proceedings will lead to the initiatives and innovations in getting the Strengthening sustainable development goals, especially in solving environmental problems.

Anaerobic biotechnology is a cost-effective and sustainable means of treating waste and wastewaters that couples treatment processes with the reclamation of useful by-products and renewable biofuels. This means of treating municipal, agricultural, and industrial wastes allows waste products to be converted to value-added products such as biofuels, biofertilizers, and other chemicals. Anaerobic Biotechnology for Bioenergy Production: Principles and Applications provides the reader with basic principles of anaerobic processes alongside practical uses of anaerobic biotechnology options. This book will be a valuable reference to any professional currently considering or working with anaerobic biotechnology options.

Athalye Sapre Pitre College Devrukh has always been on the forefront in organizing different academic, co-curricular and administrative activities to nurture the student's minds and equip them with skills to face the challenges of the real world situations with academic excellence. UGC sponsored Three Day National Conference on “Renewable Energy and Environment” was jointly organized by the Department of Chemistry and Physics during 25th to 27th September, 2014. The main objective of this conference was to provide platform to researches in the field of Physics, Chemistry, Technology, Economics, Commerce, Geography and

Environmental sciences to share problems and prospects in the field of energy and environment and to compile intellectual inputs for the sustainable development of our country. Protection of the Environment and Climate, and their preservation is a demanding social, scientific and economical task. Utilization of renewable energy, efficient conversions of fossil fuel are not only environmentally and climatically beneficial, they also preserve the finite energy sources. Awareness of this global issue at the grass root level is the need of the hour. Renewable energy and environment is the subject of global attention. The present scenario between energy generation, consumption and depletion of sources of conventional energy has various impacts on Environment. Conservation of renewable energy sources and protection of environment are the burning issues at the global level. Unless a long term planning is done to handle these issues and make them commercially viable and environment friendly; alternative technologies are developed. The potential of renewable energy sources is enormous as they can in principle meet many times the world's energy demand. Renewable energy sources such as small hydropower, wind, solar, biomass, and geothermal can provide sustainable energy services, based on the use of routinely available, indigenous resources. I am sure such platforms through national conference will definitely help to promote various academicians, scientist and research students to share and absorb various new ideas which will help our country to overcome fuel crisis and environmental problems.

Advanced Technology for the Conversion of Waste into Fuels and Chemicals: Volume 1: Biological Processes presents advanced and combined techniques that can be used to convert waste to energy, including combustion, gasification, paralysis, anaerobic digestion and fermentation. The book focuses on solid waste conversion to fuel and energy and presents the latest advances in the design, manufacture, and application of conversion technologies. Contributors from the fields of physics, chemistry, metallurgy, engineering and manufacturing present a truly trans-disciplinary picture of the field. Chapters cover important aspects surrounding the conversion of solid waste into fuel and chemicals, describing how valuable energy can be recouped from various waste materials. As huge volumes of solid waste are produced globally while huge amounts of energy are produced from fossil fuels, the technologies described in this comprehensive book provide the information necessary to pursue clean, sustainable power from waste material. Presents the latest advances in waste to energy techniques for converting solid waste to valuable fuel and energy Brings together contributors from physics, chemistry, metallurgy, engineering and the manufacturing industry Includes advanced techniques such as combustion, gasification, paralysis, anaerobic digestion and fermentation Goes far beyond municipal waste, including discussions on recouping valuable energy from a variety of industrial waste materials Describes how waste to energy technologies present an enormous opportunity for clean, sustainable energy

Anaerobic digestion is a major field for the treatment of waste and wastewater. Lately the focus has been on the quality of the effluent setting new demands for pathogen removal and for successful removal of unwanted chemicals during the anaerobic process. The two volumes on Biomethanation are devoted to presenting the state of art within the science and application of anaerobic digestion. They describe the basic microbiolgical knowledge of importance for understanding the processes of anaerobic bioreactors along with the newest molecular techniques for examining these systems. In addition, the applications for treatment of waste and wastewaters are presented along with the latest knowledge on process control and regulation of anaerobic bioprocesses. Together these two volumes give an overview of a growing area, which previously has never been presented in such a comprehensive way.