ISBN: 978-93-94174-05-4

Recent Trends in Bioresource Management for Greener Environment

Editors
Dr. Mani Jayakumar
Dr. Natchimuthu Karmegam

Excellent Publishers

EXCELLENT PUBLISHERS

Recent Trends in Bioresource Management for Greener Environment

Editor(s)

Dr. Mani Jayakumar
Assistant Professor of Chemical Engineering, and Chair Process Engineering, Haramaya Institute of Technology,
Haramaya University, P.O. Box 138,
Dire Dawa, Ethiopia

Dr. Natchimuthu Karmegam
Assistant Professor, PG and Research Department of Botany,
Government Arts College (Autonomous), Salem-7, Tamil Nadu,
India

ISBN: 978-93-94174-05-4

https://doi.org/10.20546/978-93-94174-05-4

Excellent Publishers

Excellent Publishers
Kancheepuram, India
www.excellentpublishers.com
email id: excellentpublishers2013@gmail.com

Publisher: Excellent Publishers
Editors: Dr. Mani Jayakumar and Dr. Natchimuthu Karmegam
ISBN: 978-93-94174-05-4
DOI: https://doi.org/10.20546/978-93-94174-05-4

Table of Contents

Preface

Bioresources (animals, microorganisms, plants) and their usage have been increasing rapidly, due to their era and administration hone towards making a cleaner environment. Biowaste transfer takes after the developing worldwide human populace has commended the chase to certain strategies economically for the biowaste administration to overpower the environmental issues, provoked by implications of the collection of such squandered materials. The bioconversion handles of the different biowaste into tall esteem included items appears to be practicable in different scenes in terms of an innovative and budgetary bolster.

This book, "Recent Trends in Bioresource Management for Greener Environment" covers the latest developments in biomass resources, biomass conversion, aerobic and anaerobic digestion, waste valorization, biofuels, biorefinery, and circular economy, vermicomposting advances in composting, heavy metal elimination, hazardous pollutants and treatment methods, water and wastewater management approaches for the production of various value-added products and bioenergy by the utilization of various solid and liquid renewable feedstocks.

Recent Trends in Bioresource Management for Greener Environment is a hands-on reference for faculty members, researchers, scientists, and practicing engineers working on various fields of biomass resources, biomass conversion, aerobic and anaerobic digestion, waste valorization, biofuels, biorefinery and circular economy, phytoresources for human and environmental well-being, vermicomposting, advances in composting, heavy metal elimination, hazardous pollutants and treatment methods, water, and wastewater management.

This book is a good source of information addressing industrial problems relevant to undergraduate, postgraduate, and research students under different academic departments such as agricultural engineering, biotechnology, bioenergy engineering, chemical engineering, energy engineering, environmental engineering, food technology, microbiology, and process engineering in various colleges, universities, research institutes, and higher education academic institutions.

Dr. Mani Jayakumar
Assistant Professor of Chemical Engineering, and Chair Process Engineering, Haramaya Institute of Technology, Haramaya University, Ethiopia

Dr. Natchimuthu Karmegam
PG and Research Department of Botany, Government Arts and Science College (Autonomous), Salem -7

About the Editors

Dr. Mani Jayakumar received Doctoral Degree in Faculty of Engineering and Technology with Biotechnology specialization from Vinayaka Missions University in 2011. He is having 18 years of teaching and research experience in Engineering. He qualified his UG and PG degrees in Chemical Engineering from University of Madras (2003), and Industrial Biotechnology from the Faculty of Engineering and Technology, Annamalai University (2005), respectively. At present, he is servicing in the Department of Chemical Engineering as Assistant Professor cum Organizing Chair for PG-Process Engineering Program at Haramaya University, Ethiopia since October 2015. He had engaged with various positions in different Engineering Institutions (as Principal at Sri Ramana Maharishi College of Engineering, Tamil Nadu, India; as Head In charge cum Assistant Professor at Dept. of Chemical Engineering and Biotechnology, Arulmigu Meenakshi Amman College of Engineering, Tamil Nadu, India; as Lecturer in Biotechnology Department at Vinayaka Missions University, Tamil Nadu, India, and as Department in-charge in Chemical Engineering at Thirumalai Engineering College, Tamil Nadu, India).

He has potential research outcomes on the different Chemical Engineering themes, such as Biochemical Engineering, Bioenergy Engineering, Solid Waste Management, Wastewater Treatment, and Hybrid and Nanomaterials. He published 49 reputed impacted journal articles and 19 chapters with research citations,866; h-index, 14 and i10 index, 20. As co-curricular activities, he is acting as Editorial Board Member for "International Journal of Current Microbiology and Applied Sciences" journal. He is also the potential reviewer of several journals such as Chemosphere, Environmental Pollution, Environmental Research, Fuel, Materials Letters, Science of the Total Environment, Urban Climate, Environmental Science and Pollution Research, Biomass Conversion and Biorefinery, Plos One, Science and Education Publishing, etc. He has undertaken to advice couple of PhD scholars under pursuing and couple of PhD scholars have completed. So for, he has been invited as resources key person & given talks and tutorials in numerous conferences, seminars, faculty development workshops and training programmes, and also acted as examiner, chairman, judge, panel member and reviewer in examination, conference, proposal review workshop, seminars and so forth.

Dr. N. Karmegam is an Assistant Professor of Botany, Government Arts College (Autonomous), Salem-7, Tamil Nadu, India. He obtained his PG and Ph.D., degrees from The Gandhigram Rural Institute (Deemed University), Gandhigram. He is having more than twenty years of teaching and research experience. His research interest includes medicinal and aromatic plants, phytochemistry, biomass valorization, waste management, vermitechnology and environmental remediation. His guidance has led to the award of 15 M. Phil., and 9 Ph.D., degrees. He is a recipient of Young Scientist and Best Researcher awards and he has published over 90 scientific articles in reputed Scopus indexed journals with a cumulative impact factor >600 and contributed 15 book chapters.

As a Guest Editor, he has compiled the following special issues/books:
(1) *Vermitechnology I* (2009), GSB, Japan.
(2) *Vermitechnology II* (2010), GSB, Japan.
(3) *Vermitechnology III* (2012), GSB, Japan.
(4) *Status, Trends, and Advances in Earthworm Research and Vermitechnology* (2010), Hindawi Publications, UK.

Presently, he is serving as a Guest Editor for the Special Issues:
(1) Aerobic and Anaerobic Digestion of Agro-Industrial and Livestock Wastes: A Green and Sustainable Way toward the Future (2021) – Journal: *Agronomy* (MDPI).
(2) Environmentally safe management strategies for biowaste and emerging pollutants (2022) – Journal: *Environmental Research* (Elsevier).

Dr. N. Karmegam is currently serving as Editor for two international journals and Review Editor for six different disciplines of *Frotiers Journals* (*Microbiology, Energy Research, Water, Chemical Engineering, Soil Science* and *Waste Management*).

Recent Trends in Bioresource Management for Greener Environment

Edited by Dr. Mani Jayakumar, Dr. Natchimuthu Karmegam

Dr. Mani Jayakumar

Assistant Professor of Chemical Engineering, and
Chair Process Engineering, Haramaya Institute of Technology,
Haramaya University, P.O. Box 138,
Dire Dawa, Ethiopia

Dr. Natchimuthu Karmegam

Assistant Professor, PG and Research Department of Botany,
Government Arts College (Autonomous), Salem-7,
Tamil Nadu, India

EXCELLENT PUBLISHERS

ISBN 978-93-94174-05-4

9 789394 174054

Published by
Excellent Publishers

No.:38/48, Second Street,Ellappanagar, Kancheepuram, Tamilnadu, India
www.excellentpublishers.com e.mail: excellentpublishers2013@gmail.com
Mobile No.: +91-9842641794