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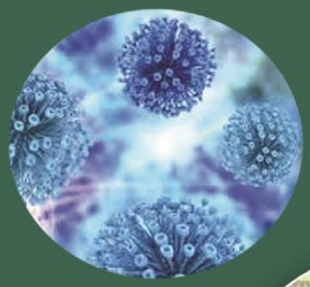
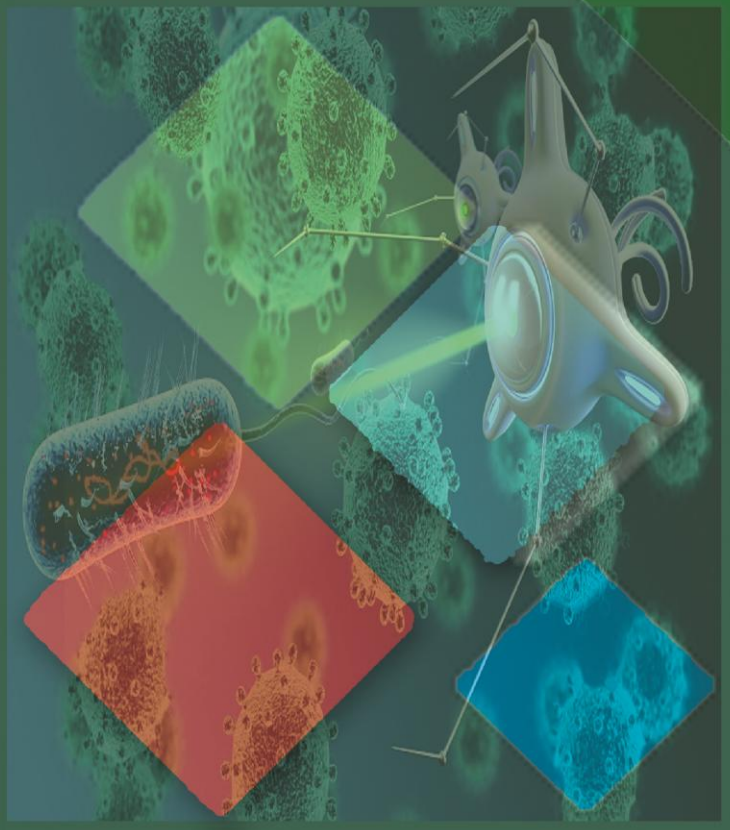
Status, Trends and Advances in Bioremediation

Editors
Dr. Natchimuthu Karmegam
Dr. Mani Prakash





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Preface

The present days, environmental situation posed by anthropogenic activities require right technology for achieving sustainability in respect of remediating various kinds of environmentally unsafe contaminants. There is a need for more research in this area because it seems to be a sustainable approach for managing environmental pollution. As part of the environmental impact on the fate and behavior of environmental contaminants, efforts must be made to promote a synergistic interaction between them, as well as selecting and applying the most appropriate bioremediation techniques and other relevant technologies that can sustain the effective and successful operation and monitoring of these processes. The method of bioremediation involves using living organisms to eliminate contaminants, pollutants, and toxins from soil, water, and other environments. According to cost, site dimensions, contaminants types, and concentrations, bioremediation can be conducted both *in situ* and *ex situ*. In comparison to other methods of cleanup, bioremediation has numerous advantages. Natural processes are used exclusively so that ecosystems are not damaged. In order to clean up contaminants in soil and groundwater, bioremediation is often conducted underground using amendments and microbes. Attractively, biostimumation, bioaugmentation, and intrinsic bioremediation efforts have been addressed world-wide for mitigating the issues. At this juncture, there is an urgent requirement to provide different aspects of bioremediation to eliminate different kinds of pollutants in the environment, source elimination and attractive biological methods. Hence, the present context of current information pertaining to bioremediation measures have been compiled to prvide uptodate knowledge on bioremediation processes. We hope the chapters of this book definitey would provide a platform for sharing research innovations, solutions to environmental issues and advanced knowledge on bioremediation techniques.

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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 >400 and contributed 15 book chapters.

As a Guest Editor, he has compiled the four 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, Ongoing).
(2) Environmentally safe management strategies for biowaste and emerging pollutants (2022) – Journal: *Environmental Research* (Elsevier, Ongoing).

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*).

Dr. M. Prakash, Ph.D., is working as an Associate Professor and Head of the Department of Microbiology, Kanchi Shri Krishna College of Arts and Sciences, Kancheepuram, Tamil Nadu, India. He is having more than 20 years of teaching experience. He has organized National and International Conferences funded by DBT and TNSCST. He is designated as a Recognized Supervisor for M. Phil., and Ph.D., by a reputable University of Madras, Chennai, India. Under his guidance 22 M. Phil., and Eight Ph.D., research scholars have been awarded. Dr. M. Prakash has extensive scientific experience, has presented more than 40 research works in various National and International Conferences/Seminars. To his credit, Dr. Prakash has published more than 50 research and review articles in reputed journals with a high impact factor and published eight books and book chapters. He is serving as an Editor-in-Chief in two International journals of repute. He has been serving as a Reviewer for several peer reviewed international journals.