

Preface

The last two decades have witnessed a great surge in the research on algal biotechnology. Significant advances have been made in areas relating to the use of microalgae in biofuel production, carbon dioxide sequestration, and environmental bioremediation. The culture of microalgae in photobioreactors, harvesting of algal biomass, mixotrophic growth including carbon recovery, and environmental remediation using microalgae, phototrophic biofilms, and mats are the major areas in which a good deal of information has been generated. The enormous potential of algae as the source of food, nutraceuticals, and pharmaceuticals has also been recognized. The present volume endeavors to present a critical account of some of the above-mentioned aspects of algal biotechnology.

The book is organized into 12 chapters. The first two chapters comprise the modeling and event-based control systems for the culturing of microalgae in industrial photobioreactors, while Chapters “[Generation and Harvesting of Microalgal Biomass for Biofuel Production](#)” and “[Microalgae-Based Biorefineries as a Promising Approach to Biofuel Production](#)” deal with the algal biomass generation, harvesting, and integrated use of microalgae in biorefinery and generation of biofuel feedstock. Chapter “[Microalgae Mixotrophic Growth: Opportunity for Stream Depuration and Carbon Recovery](#)” explores the possibility of employing microalgae, growing under the mixotrophic condition, in depuration of stream and recovery of carbon. The next four chapters (Chapters “[Sustainable Utilization of Marine Algae Biomass for Environmental Bioremediation](#)”–“[Wastewater Treatment Using Phototrophic-Heterotrophic Biofilms and Microbial Mats](#)”) are dedicated to discussing the use of microalgae, cyanobacteria, and phototrophic biofilms/mats in environmental bioremediation. The selective metal ion homeostasis in cyanobacteria has been elegantly described in Chapter “[Selective Metal Ion Homeostasis in Cyanobacteria](#)”. Chapters “[Algae as Source of Food and Nutraceuticals](#)”–“[Production of Primary and Secondary Metabolites Using Algae](#)” discuss the use of microalgae as the source of food, nutraceuticals, and pharmaceuticals.

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appurtenant criticism, and also showed a keen interest in shaping our career in algal biology. His breadth of vision and deep knowledge of the subject always enlightened our path, so that we could attain academic excellence. We fail to find adequate words to express our humble gratitude to him and dedicate this book to him as a token of our respect for him.

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