

Biofuel and Biorefinery Technologies

Volume 8

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This book series provides detailed information on recent developments in biofuels & bioenergy and related research. The individual volumes highlight all relevant biofuel production technologies and integrated biorefinery methods, describing the merits and shortcomings of each, including cost-efficiency. All volumes are written and edited by international experts, academics and researchers in the respective research areas.

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Biodiesel

From Production to Combustion

 Springer

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Preface

This book is about biodiesel production presenting in-depth information on the state of the art of global biodiesel production and investigates its impact on climate change. Biodiesel is arguably the most commercialized type of petrodiesel alternative. A number of parameters including increasing energy demands and worsening environmental conditions on one hand and similar physicochemical properties of biodiesel to those of petrodiesel, on the other hand, are among the main driving factors of the growing interest in biodiesel.

The present book, which is the eighth book in the series on Biofuel and Biorefinery Technologies, offers a comprehensive reference guide to biodiesel production by internationally recognized experts in the field of biodiesel production from both academia and industry. The 10 chapters cover various aspects of biodiesel production technology from the basics, i.e., major principles of operation, process control, and troubleshooting to production systems (reactor technologies) as well as biodiesel purification and upgrading technologies. In addition, conventional and emerging applications of biodiesel by-products with a view to further economize biodiesel production, economic risk analysis, and critical comparison of biodiesel production systems as well as techno-economical aspects of biodiesel plants are also comprehensively reviewed and discussed. Providing in-depth and cutting-edge information on central developments in the field, “Biodiesel: From Production to Combustion” also thoroughly investigates the important aspects of biodiesel production and combustion by taking advantage of advanced sustainability analysis tools including life cycle assessment (LCA) and exergy approaches. In closing, the application of Omics technologies in biodiesel production is presented and discussed. The book is intended for all researchers, practitioners, and students who are interested in the current trends and future prospects of biodiesel production technologies.

It is expected that the present volume on biodiesel would assist both the scientific and industrial communities in further developing this industry worldwide. We are thankful to the authors of all the chapters for their efficient cooperation and also for their readiness in revising the manuscripts. We also would like to extend our appreciation to the reviewers who in spite of their busy schedule assisted us by

evaluating the manuscripts and provided their critical comments to improve the manuscripts. We would like to sincerely thank Dr. Vijai Kumar Gupta and Dr. Maria G. Tuohy and the team of Springer Nature, in particular, Dr. Andrea Schlitzberger, Mr. Arumugam Deivasigamani, and Mr. Viju Falgon Jayabalan for their cooperation and efforts in producing this book.

Karaj, Iran
October 2018

Meisam Tabatabaei
Mortaza Aghbashlo

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