

## CONTENTS

|  |     |
|--|-----|
| Preface  | ix  |
| 1. Industrial Development of Biomass energy resources  | 3   |
| 2. Forest Biomass for energy   | 21  |
| 3. Production of nonwoody land plants as a renewable energy source   | 49  |
| 4. Biomass Production by freshwater and Marine Macrophytes   | 77  |
| 5. Energy from Fresh and brackish water aquatic plants   | 99  |
| 6. Multi-Use Crops and Botanochemical production   | 125 |
| 7. Effects of reaction Conditions on the Aqueous Thermochemical conversion of Biomass to oil                       | 137 |
| 8. Liquid Hydrocarbon fuels from Biomass   | 163 |
| 9. Key Factors in the Economic Analysis of ethanol production From Biomass   | 185 |
| 10. Perspectives on the Economic Analysis of Ethanol Production From Biomass                                       | 199 |
| 11. Chemicals from Biomass by Improved Enzyme Technology   | 213 |
| 12. Methane Production by anaerobic Digestion of Bermuda Grass   | 229 |
| 13. Advanced Digestion process Development for methane production from Biomass-Waste Blends                        | 251 |
| 14. Methane production from landfills  | 279 |
| 15. Product Distribution in the Rapid Pyrolysis of biomass/Lignin for production of acetylene                      | 293 |
| 16. The Effects of Residence time, Temperature, and Pressure on the Steam Gasification of Biomass                  | 313 |
| 17. Gasification of Oak Sawdust, Corn stover, and cotton Gin Trash in a Countercurrent Fluidized bed pilot reactor | 335 |
| 18. Thermochemical Gasification of woody biomass   | 351 |
| 19. Comparative economic analysis of chemicals and synthetic fuels from biomass                                    | 379 |
| 20. An Analysis of Gasohol Energetics  | 419 |
| 21. Wood Production energetics: An analysis for fuel Applications  | 433 |
| 22. Silvicultural systems for the energy efficient production of fuel biomass                                      | 447 |
| 23. Electric power generation from wood waste: A case Study  | 465 |
| 24. A biomass allocation model : Conversion of Biomass to methanol   | 483 |
| 25. The energy Plantation and the photosynthesis energy factory  | 495 |
| Index  | 545 |