Record Nr. UNINA9910808974003321 Biofuels: alternative feedstocks and conversion processes / / edited by **Titolo** Ashok Pandey ... [et al.] Pubbl/distr/stampa Kidlington, Oxford;; San Diego, Calif.,: Academic Press, 2011 **ISBN** 1-283-16414-0 9786613164148 0-12-385100-9 Edizione [1st ed.] Descrizione fisica 1 online resource (642 p.) Altri autori (Persone) PandeyAshok Disciplina 333.95/39 333.9539 Soggetti Biomass energy Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Note generali Description based upon print version of record. Nota di bibliografia Includes bibliographical references and index. Nota di contenuto Front Cover; Biofuels: Alternative Feedstocks and Conversion Processes; Copyright; Contents; Preface; Contributors; Section I: General; Chapter 1: Principles of Biorefining; 1. Introduction; 2. From fossil to biomass raw materials; 3. Biomass processing in biorefinery; 4. Lignocellulosic molecular components and their derivatives; 5. Biorefinery to replace existing fossil bulk chemicals; 6. Biorefinery to produce alternative products; 7. Next research outlook; References; Chapter 2: Life-Cycle Assessment of Biofuels: 1. Introduction: 2. The concept of LCA and its application to biofuels 3. Methodology and assumptions 4. Case study: bioethanol from wheat: 5. Results: 6. Conclusions: References: Chapter 3: Thermochemical Conversion of Biomass to Biofuels; 1. Introduction; 2. Feedstocks for biofuels; 3. Composition of lignocellulosic biomass; 4. Lignocellulosic biomass pretreatment techniques; 5. Biotechnological conversion; 6. Thermochemical conversion; 7. Bio-refineries and biofuels; 8. Typical issues for life-cycle analysis: 9. Perspectives and challenges: References; Chapter 4: Biomass-derived Syngas Fermentation into Biofuels; 1. Background 2. Fundamental aspects of syngas fermentation3. Microbiology of

syngas fermentation; 4. Syngas characteristics; 5. Current

developments in syngas fermentation; 6. Factors affecting syngas

fermentation; 7. Industrial-scale syngas fermentation; 8. Challenges and future research directions; 9. Summary; References; Section II: Production of bioethanol from lignocellulosic feedstocks; Chapter 5: Lignocellulosic Bioethanol: Current Status and Future Perspectives; 1. Introduction; 2. First-generation fuel ethanol production: the feedstock and the process and their constraints

- 3. Second-generation ethanol production4. Feasibility of lignocellulosic ethanol production; 5. Concluding remarks; References; Chapter 6: Technoeconomic Analysis of Lignocellulosic Ethanol; 1. Introduction; 2. State of the art; 3. Key drivers of the lignocellulosic ethanol production cost; 4. Cost management system; 5. Current economic evaluation of lignocellulosic bioethanol: some limitations; 6. Conclusion; References; Chapter 7: Pretreatment Technologies for Lignocellulose-to-Bioethanol Conversion; 1. Introduction; 2. Toxic Compounds Generated During Pretreatment
- 3. Pretreatment processes 4. Biological pretreatments; 5. Concluding remarks; References; Additional Resources; Chapter 8: Production of Celluloytic Enzymes for the Hydrolysis of Lignocellulosic Biomass; 1. Introduction; 2. Cellulase: mode of action; 3. Cellulase systems and the control of cellulase gene expression; 4. Cellulase producers; 5. Pretreatment; 6. Bioprocesses for cellulase production; 7. Applications of cellulases; 8. Cellulase market scenario; 9. Engineered/artificial cellulases; 10. Future perspectives; 11. Challenges; 12. Conclusion; References

Chapter 9: Production of Hemicellulolytic Enzymes for Hydrolysis of Lignocellulosic Biomass

Sommario/riassunto

Global concern for energy security and environmental protection has put great emphasis on the search for alternative energy sources, particularly for the transport sector. Biofuels have emerged as a highly promising source of alternative energy, and have drawn global R&D for their production using biomass. With the increasing worldwide demand of energy along with the depletion of conventional fossil fuel reserves, there has been growing global interest in developing alternative sources of energy. There has also been concern in growing economies regarding energy security. Biofuels of