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Nota di contenuto	Chapter 1. Thermochemical conversion of biomass and upgrading of bio-products to produce fuels and chemicals -- Chapter 2. Biochemical Conversion of Residual Biomass: An Approach to Fuel Gas and Green Fertilizers -- Chapter 3. Bio-catalytic Itaconic Acid and Bio-based Vinyl Monomer Production Processes -- Chapter 4. Biological and Environmental degradations of Polyamides, Polylactic Acid and chitin for future prospects -- Chapter 5. Plant microbial fuel cell as a biomass conversion technology for sustainable development -- Chapter 6. Catalytic and Non-Catalytic Hydrothermal Liquefaction of Microalgae -- Chapter 7. Catalytic and Non-Catalytic Methods for Biodiesel Production -- Chapter 8. Castor oil-based derivatives as a raw material

for the chemical industry: A REVIEW -- Chapter 9. Sustainability of the catalytic process for biomass conversion: Recent trends and future prospects -- Chapter 10. Understanding Biomass Chemistry Using Multiscale Molecular Modeling Approach -- Chapter 11. Levulinic acid and furan-based multifunctional materials – Opportunities & Challenges -- Chapter 12. Solid Acid Catalyzed Esterification of Levulinic Acid for Production of Value-added Chemicals -- Chapter 13. cC(sp3)–H Bond Hetero-functionalization of Aliphatic Carboxylic Acid Equivalents Enabled by Transition Metals -- Chapter 14. Carbohydrates to chemicals and fuel additives over modified polyoxometalate catalysts -- Chapter 15. Catalytic conversion of biomass derived glycerol to value added chemicals -- Chapter 16. Catalytic conversion of alcohols into value-added products -- Chapter 17. Steam Reforming of Methanol, Ethanol and Glycerol over Catalysts with Mesoporous Supports: A Comparative Study -- Chapter 18. Catalytic production of high-value chemicals from high volume non-food biomass -- Chapter 19. Efficient Nanocomposite Catalysts for Sustainable Production of Biofuels and Chemicals from Furanics -- Chapter 20. Waste Valorization of Water Hyacinth using Biorefinery Approach: A Sustainable Route -- Chapter 21. Furfural and Chemical routes for its Transformation into Various Products -- Chapter 22. A sustainable process for the synthesis of alkylpyrazines by dehydrocyclization of crude glycerol and ethylenediamine over metal chromite catalysts -- Chapter 23. The role of Group VIII metals in hydro-conversion of lignin to value added chemicals and bio-fuels -- Chapter 24. Biochar as a Catalytic Material -- Chapter 25. Biomass Conversion and Green Chemistry -- Chapter 26. Nanostructured Photocatalysts for Degradation of Environmental Pollutants -- Chapter 27. Biohydrometallurgy: A Sustainable Approach for Urban Mining of Metals and Metal Refining.

Sommario/riassunto

This book is part of a two-volume work that offers a unique blend of information on realistic evaluations of catalyst-based synthesis processes using green chemistry principles and the environmental sustainability applications of such processes for biomass conversion, refining, and petrochemical production. The volumes provide a comprehensive resource of state-of-the-art technologies and green chemistry methodologies from researchers, academics, and chemical and manufacturing industrial scientists. The work will be of interest to professors, researchers, and practitioners in clean energy catalysis, green chemistry, chemical engineering and manufacturing, and environmental sustainability. This volume focuses on the potentials, recent advances, and future prospects of catalysis for biomass conversion and value-added chemicals production via green catalytic routes. Readers are presented with a mechanistic framework assessing the development of product selective catalytic processes for biomass and biomass-derived feedstock conversion. The book offers a unique combination of contributions from experts working on both lab-scale and industrial catalytic processes and provides insight into the use of various catalytic materials (e.g., mineral acids, heteropolyacid, metal catalysts, zeolites, metal oxides) for clean energy production and environmental sustainability.