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Nota di contenuto	Frontmatter -- Preface -- Contents -- Contributing Authors -- Abbreviations -- Introduction to Biorefinery -- 1. Catalysis, Growth, and Society / Aresta, Michele / Dibenedetto, Angela / Dumeignil, Franck -- 2. Terrestrial Biomass Production / Christou, Myrsini / Alexopoulou, Efthymia / Eleftheriadis, Ioannis / Papamichael, Ioanna / Tsiotas, Kostas / Stolarski, Mariusz / Krzyzaniak, Michal / Themistocles, Charles -- 3. Production and uses of aquatic biomass / Dibenedetto, Angela / Colucci, Antonella -- 4. Introduction to bioconversion and downstream processing: principles and process examples / Groeger, Christin / Sabra, Wael / Zeng, An-Ping -- 5. Microbial strain selection and development for the production of second-generation bioethanol / Agrimi, Gennaro / Pisano, Isabella / Ricci, Maria Antonietta / Palmieri, Luigi -- 6. Biomass-derived molecules conversion to chemicals using heterogeneous and homogeneous catalysis / Katryniok, Benjamin / Jérôme, François / Monflier, Eric / Paul, Sébastien / Dumeignil, Franck -- 7. Bio-sourced polyolefins / Grassi, Alfonso / Buonerba, Antonio / Sanchez, Sheila Ortega -- 8. Conversion of lignocellulosic biomass-derived intermediates to hydrocarbon fuels / Heracleous, Eleni / Vasiliadou, Efterpi S. / Iliopoulou, Eleni F. / Lappas, Angelos A. / Lemonidou, Angeliki A. -- 9. Use of bio-sourced syngas / Ricci, Marco / Perego, Carlo -- 10. Oil chemistry: chemicals, polymers, and fuels / Couturier, Jean-Luc / Dubois, Jean-Luc -- 11. Lignin biorefinery: structure, pretreatment and use / Lange, Heiko / Bartzoka, Elisavet D. / Crestini, Claudia -- 12. Utilization of existing assets / Roelant, Raf / Cavani, Fabrizio / Pereira, Carla S.M. / Rodrigues, Alírio E. -- 13. Biogas from wet biomass: basic science and applications / Aresta, Michele -- Index
Sommario/riassunto	Biorefineries compiles the basic science and technologies used to convert terrestrial and aquatic biomass into essential molecular compounds and polymeric materials. The book provides in depth insights into this fairly recent concept of industrial chemistry that aims to achieve optimal economic profits while minimizing the environmental impact. Chapters written by renowned experts cover, amongst others, the application of catalysis, downstream processing, biomass sourced olefins, lignin biorefinery techniques and biogas. The authors thoroughly examine and explain the value chain for biomass conversion into platform molecules and their transformation into final

products. A comprehensive thematic overview on the topic giving beginners access to fundamental concepts is presented. Supplemented by numerous full color figures and tables, the contents impart knowledge about the involved techniques. Advanced students and experts in the field will find the summary of state-of-the-art research and current literature of valuable interest. Explores the enormous potential of biomass conversion as a future source for fuels and chemicals Focuses on both general scientific background and current innovations in the field of biorefinery Targets students and researchers in Chemistry, Chemical Engineering, Biotechnology, and Materials Science About the Editors Prof. Michele Aresta, Chair of the Scientific Committee of CIRCC in Italy and holds the IMM Chair at the Department of Chemical and Biomolecular Engineering at NUS, Singapore. He is author of over 200 papers and Author or Editor of nine books. Prof. Angela Dibenedetto, Associate Professor at the Department of Chemistry of the University of Bari (Italy) focused on carbon dioxide utilization by applying biorefinery concepts; and Director of the Interuniversity Consortium on Chemical Reactivity and Catalysis-CIRCC. Prof. Franck Dumeignil, Deputy Director of the CNRS joint Unit of Catalysis and Chemistry of Solid (UCCS) of Lille University (France); project coordinator of several projects on chemistry, including the EuroBioRef Project for designing next generation biorefineries.

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