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Nota di contenuto	Intro -- Contents -- List of authors -- Chapter 1 A short recapitulation of the autotrophic metabolism -- Chapter 2 Metabolic engineering of microbes -- Chapter 3 Protein engineering -- Chapter 4 Gas fermentation -- Chapter 5 Introduction to autotrophic cultivation of microalgae in photobioreactors -- Chapter 6 Synthetic biology of cyanobacteria -- Chapter 7 Algal biotechnology -- Chapter 8 Biocatalytic applications of autotrophic organisms -- Chapter 9 Photocatalysis to promote cell-free biocatalytic reactions -- Chapter 10 Electroautotrophs: feeding microbes with current for CO&lt -- sub&gt -- 2&lt -- /sub&gt -- fixation -- Chapter 11 Cupriavidus necator - a broadly applicable aerobic hydrogen-oxidizing bacterium -- Chapter 12 Poly(3-hydroxybutyrate) as renewable resource -- Chapter 13 Applications of mixed microbial cultures in industrial biotechnology -- Chapter 14 Economic framework of autotrophic processes -- Index.
Sommario/riassunto	The depletion of fossil resources and an ever-growing human population create an increasing demand for the development of sustainable processes for the utilization of renewable resources. As autotrophic microorganisms offer numerous metabolic pathways for the fixation of carbon dioxide and the metabolic utilization of light, electricity and inorganic energy donors, they are expected to play a pivotal role in an emerging carbon neutral society. This text-book

presents the metabolic principles of autotrophy and current efforts for their utilization in biotechnology, including photoautotrophic, chemolithoautotrophic and electroautotrophic organisms. It outlines how modern molecular biology and process engineering create technologies that allow to use industrial off-gases and inorganic energy for the synthesis of bio-based plastics, materials and other chemical products. The text-book is ideally suited for students in advanced graduate and master courses and offers a reference for PhD students, engineers, chemists, biologists and all with an interests in biotechnology and renewable resources.