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Nota di contenuto	Cover -- Title Page -- Copyright -- Contents -- Preface -- Introduction -- Chapter 1 Methane -- 1.1 Application -- 1.2 Conventional Production of Methane -- 1.3 Carbon Dioxide as Feedstock -- 1.4 Conversion of Carbon Dioxide into Methane -- 1.4.1 The Chemical Sabatier -- 1.4.2 The Biochemical Sabatier -- 1.5 Biochemical Pathway Design -- 1.6 Integration of Hydrogen Production and the Biochemical Methanation -- 1.6.1 Conversion of Carbon Dioxide into Methane with Integrated Production of Hydrogen -- 1.6.2 Mechanisms at the Cathode for the Uptake of Reduction Equivalents -- 1.6.3 R&D with Integrated Hydrogen Production and Biochemical Methanation and IET -- 1.6.4 Boundary Conditions for Potential Commercial Application -- 1.7 Process Development for the “Biochemical Sabatier” without Integrated Water Electrolysis -- 1.8 Commercial Application of Fermentative Methane Production -- References -- Chapter 2 Ethanol Ex Glucose -- 2.1 Application -- 2.2 Production of Ethanol -- 2.3 Pathway Design -- 2.3.1 Glycolysis as Natural Fermentation Pathway -- 2.3.2 S. cerevisiae as Fermentation Host -- 2.3.3 Generation of Carbon Dioxide as By Product -- 2.3.4 Zymomonas mobilis as Fermentation Host

Sommario/riassunto

This book, authored by Dr. Walter Koch, explores industrial fermentation processes and their applications in producing chemicals and fuels. It delves into the design of metabolic pathways for various compounds, such as methane, ethanol, lactic acid, and others, using microorganisms like E. coli and Saccharomyces cerevisiae. The text covers advancements in molecular biology, enzyme optimization, and metabolic engineering, aiming to enhance production efficiency and reduce carbon footprints. It addresses the challenges of raw material extraction and the potential of fermentation technology in industrial applications. The book is intended for professionals and researchers in biotechnology, chemical engineering, and related fields.