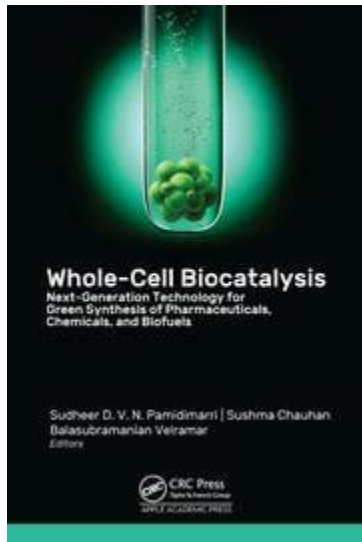


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Chapter

Microbial Consortia: A Mixed Cell Catalyst for Biotransformation of Biomass into Biofuels and Chemicals

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Book [Whole-Cell Biocatalysis](#)

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ABSTRACT

Adding value to waste using environmental biotechnological approaches is a promising concept for its management. Mixed culture fermentation is the way of utilizing two or more microorganisms as biocatalyst to produce valuable products from various substrates, including wastes. Mixed culture

fermentation could become an excellent alternative to traditional pure culture-based biotechnology to enable next generation biofuels and bio-commodity production. This caters the advantages over application of pure cultures, such as better utilization of the substrate, waste utilization, wider range of enzymes, ability to attack and convert greater variety of compounds, higher growth rates and product yield, multistep transformations in a single bioreactor and protection against unwanted contaminants. This chapter highlights some of the important and recent developments in bio-catalysis 270based on mixed microbial cultures for biofuel production with a special focus on understanding various factors that affect the metabolic pathways of mixed cultures fermentation for biofuel production such as ethanol, butanol, syngas, methane, and hydrogen. The chapter also reviews the technical constraints of the mixed fermentation process for practical and commercial applications, and applications of genetic engineering and nanotechnology tools for improving the mixed culture technology.

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