



# Biological Conversion of Biomass for Fuels and Chemicals

Explorations from Natural Utilization Systems

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## Synopsis

This book covers biomass modification to facilitate the industrial degradation processing of feedstocks and new technologies for the conversion of lignocelluloses into biofuels. It describes recent advances in natural biomass utilization systems such as wood-feeding termites and animals that efficiently degrade lignocellulose substrates. Consolidated bioprocessing (CBP) integrates cellulase production and cellulose hydrolysis, with pentose and hexose fermentation in a single step. This replicates what happens in the digestive systems of animals, such as termites and cows. CBP has the potential to reduce production costs and lower capital investment whilst increasing conversion efficiency. The book makes essential reading for academics and industrial groups concerned with overcoming the challenges inherent in the biological conversion of biomass into fuels and chemicals.

## Brief Contents

- Biomass modification to reduce the recalcitrance of lignocellulose in processing
- Overview of lignocellulose: structure and chemistry
- Advances in the measurement/characterization of biomass structure
- Lignin modification to reduce the recalcitrance of biomass processing
- Advances in genetic manipulations of plants for production of hydrolysis enzymes used in lignocellulosic bioethanol process
- The diversity of lignocellulosic biomass resources and their evaluations for biofuels and chemicals
- Technologies to study plant biomass fermentation using the model bacterium *Clostridium phytofermentans*

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