Aqueous Pretreatment of Plant Biomass for Biological and Chemical Conversion to Fuels and Chemicals

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DESCRIPTION

Plant biomass is attracting increasing attention as a sustainable resource for large-scale production of renewable fuels and chemicals. However, in order to successfully compete with petroleum, it is vital that biomass conversion processes are designed to minimize costs and maximize yields. Advances in pretreatment technology are critical in order to develop high-yielding, cost-competitive routes to renewable fuels and chemicals.

*Aqueous Pretreatment of Plant Biomass for Biological and Chemical Conversion to Fuels and Chemicals* presents a comprehensive overview of the currently available aqueous pretreatment technologies for cellulosic biomass, highlighting the fundamental chemistry and biology of each method, key attributes and limitations, and opportunities for future advances.

Topics covered include:

- The importance of biomass conversion to fuels
- The role of pretreatment in biological and chemical conversion of biomass
- Composition and structure of biomass, and recalcitrance to conversion
- Fundamentals of biomass pretreatment at low, neutral and high pH
- Ionic liquid and organosolv pretreatments to fractionate biomass
• Comparative data for application of leading pretreatments and effect of enzyme formulations
• Physical and chemical features of pretreated biomass
• Economics of pretreatment for biological processing
• Methods of analysis and enzymatic conversion of biomass streams
• Experimental pretreatment systems from multiwell plates to pilot plant operations

This comprehensive reference book provides an authoritative source of information on the pretreatment of cellulosic biomass to aid those experienced in the field to access the most current information on the topic. It will also be invaluable to those entering the growing field of biomass conversion.

ABOUT THE AUTHOR

Professor Charles Wyman has devoted most of his career to leading advancement of technology for biological conversion of cellulosic biomass to ethanol and other products that will reduce our excessive dependence on petroleum. A substantial portion of this research is directed at advancing technologies for the most expensive and critical unit operations: pretreatment and cellulose and hemicellulose hydrolysis. Professor Wyman is Chair in Environmental Engineering at the Center for Environmental Research and Technology and Professor in Chemical and Environmental Engineering at the University of California at Riverside.

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