

1. Record Nr.	UNINA9910815768103321
Autore	Chen Hongzhang
Titolo	Lignocellulose biorefinery engineering : principles and applications / / Hongzhang Chen
Pubbl/distr/stampa	Cambridge, England : , : Woodhead Publishing, , 2015 ©2015
ISBN	0-08-100145-2 0-08-100135-5
Descrizione fisica	1 online resource (274 p.)
Collana	Woodhead Publishing Series in Energy ; ; Number 74
Disciplina	662.88
Soggetti	Lignocellulose - Biotechnology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Front Cover; Lignocellulose Biorefinery Engineering: Principles and Applications; Copyright; Contents; Woodhead Publishing Series in Energy; Preface; Chapter 1: Lignocellulose biorefinery engineering; 1.1. Resources, energy, and environment; 1.1.1. Definition and classification of resources; 1.1.2. Resource issues and resource crises; 1.1.2.1. Resource issues; 1.1.2.2. Resource crises; 1.2. Resource recycling and waste reuse; 1.2.1. Resource recycling; 1.2.2. Waste reuse; 1.2.3. Biomass recycling; 1.2.4. Eco-industrial systems and eco-industrial parks; 1.3. Lignocellulosic resources 1.3.1. Lignocellulose definition and classification1.3.2. Characteristics of lignocellulosic resources; 1.3.3. Utilization history of lignocellulosic resources; 1.3.3.1. History of lignocellulose utilization for energy; 1.3.3.2. History of lignocellulose utilization for materials; 1.3.4. Current situation of lignocellulose utilization; 1.4. Lignocellulose biorefinery engineering; 1.4.1. Necessity for lignocellulose biorefining; 1.4.2. Key points of lignocellulose biorefinery engineering; 1.4.2.1. Theoretical basis of lignocellulose biorefining 1.4.2.2. Feedstock engineering for lignocellulose biorefining1.4.2.3. Conversion engineering for lignocellulose biorefining; 1.4.2.4. Product engineering for lignocellulose biorefining; 1.4.2.5. Process engineering for lignocellulose biorefining; 1.4.2.6. Modes of integrated industrial

lignocellulose biorefinery chains; References; Chapter 2: Theoretical basis of lignocellulose biorefining; 2.1. Lignocellulose recalcitrance; 2.1.1. Introduction to lignocellulose recalcitrance; 2.1.2. Structural analysis of lignocellulose recalcitrance; 2.2. Lignocellulose porous medium
2.2.1. Porous structure at the tissue level2.2.2. Porous structure at the cell level; 2.2.3. Porous structure at the cell wall level; 2.3. Mass transfer resistance of lignocellulose: seepage recalcitrance; 2.3.1. Lignocellulose transfer structure; 2.3.2. Lignocellulose seepage recalcitrance; 2.3.3. Impact of lignocellulose interfacial properties on seepage recalcitrance; 2.4. Lignocellulose functional components; 2.5. Changes in composition and structure during the lignocellulose biorefining process; 2.6. Analysis methods in lignocellulose biorefining
2.6.1. Analysis methods for lignocellulosic materials2.6.2. Analysis methods for the biorefinery process; 2.6.3. Analysis methods for products; References; Chapter 3: Lignocellulose biorefinery feedstock engineering; 3.1. Overview; 3.2. Technologies of components fractionation; 3.2.1. Molecular level selective fractionation technology; 3.2.2. Cell-level selective fractionation technology; 3.2.3. Tissue-level selective fractionation technology; 3.3. Technologies of selective structure deconstruction; 3.3.1. Introduction to selective structure deconstruction technologies
3.3.2. The history of the development of selective structure deconstruction technologies

Sommario/riassunto

Biomass resources and their refining are key research topics internationally as alternatives to fossil fuel resources and oil refining. This book explores the heterogeneous nature of lignocellulosic biomass, which restricts its use as a raw material, and describes the theoretical basis of the lignocellulose refinery. It puts forward the theory of the integrated biomass refinery system, which produces multiple products, including biofuels, biomaterials, biochemicals, food and feed based on careful fractionation of the raw material. Chapter 1 introduces the significance and development of ligno
