1. Record Nr. UNINA9910779718903321 Autore Basu Prabir <1946-> Titolo Biomass gasification, pyrolysis and torrefaction: practical design and theory // Prabir Basu, Dalhousee University and Greenfield Research Incorporated Pubbl/distr/stampa Amsterdam;; Boston,: Elsevier/AP, 2013 London:,: Academic Press,, 2013 **ISBN** 0-12-396543-8 Edizione [2nd ed.] Descrizione fisica 1 online resource (xix, 530 pages): illustrations (some color) Collana Gale eBooks Disciplina 662.88 Soggetti Biomass gasification **Pyrolysis** Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Note generali Description based upon print version of record. Includes bibliographical references and index. Nota di bibliografia Nota di contenuto Front Cover; Biomass Gasification, Pyrolysis, and Torrefaction; Copyright Page: Dedication: Contents: Preface: Acknowledgments: About the Author; 1 Introduction; 1.1 Biomass and its Products; 1.1.1 Products of Biomass; 1.1.1.1 Chemicals Industries; 1.1.1.2 Energy Industries: 1.1.1.3 Transport Industries: 1.1.1.4 Environmental Industries; 1.2 Biomass Conversion; 1.2.1 Biochemical Conversion; 1.2.2 Thermo chemical Conversion; 1.2.2.1 Combustion; 1.2.2.2 Pyrolysis; 1.2.2.3 Torrefaction; 1.2.2.4 Gasification; 1.2.2.5 Liquefaction; 1.3 Motivation for Biomass Conversion; 1.3.1 Renewability **Benefits** 1.3.2 Environmental Benefits 1.3.2.1 Carbon-Neutral Feature of Biomass; 1.3.2.2 Sulfur Removal; 1.3.2.3 Nitrogen Removal; 1.3.2.4 Dust and Hazardous Gases; 1.3.3 Sociopolitical Benefits; 1.4 Historical Background: 1.5 Commercial Attraction of Gasification: 1.5.1 Comparison of Gasification and Combustion; 1.6 Brief Description of Some Biomass Conversion Processes; 1.6.1 Torrefaction; 1.6.2 Pyrolysis; 1.6.3 Combustion of Carbon; 1.6.4 Gasification of Carbon; 1.6.5 Syngas Production; 1.6.6 Methanol Synthesis; 1.6.7 Ammonia Synthesis; 1.6.8 Fischer-Tropsch Reaction; 1.6.9 Methanation Reaction

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Sommario/riassunto

Biomass is the most widely used non-fossil fuel in the world. Biomass resources show a considerable potential in the long-term given the increasing proliferation of dedicated energy crops for biofuels. The second edition of Biomass Gasification and Pyrolysis is enhanced with new topics, such as torrefaction and cofiring, making it a versatile resource that not only explains the basic principles of energy conversion systems, but also provides valuable insight into the design of biomass conversion systems. This book will allow professionals, such as engineers, scientists, and op