Contents

Part I  Characters of High Temperature Water and Hydrothermal Reactions

1  Water Under High Temperature and Pressure Conditions and Its Applications to Develop Green Technologies for Biomass Conversion ................................................. 3
   Fangming Jin, Yuanqing Wang, Xu Zeng, Zheng Shen and Guodong Yao

Part II  Hydrothermal Conversion of Biomass into Chemicals

2  Hydrothermal Conversion of Cellulose into Organic Acids with a CuO Oxidant .................................................. 31
   Yuanqing Wang, Guodong Yao and Fangming Jin

3  Hydrothermal Conversion of Lignin and Its Model Compounds into Formic Acid and Acetic Acid ................................. 61
   Xu Zeng, Guodong Yao, Yuanqing Wang and Fangming Jin

4  Production of Lactic Acid from Sugars by Homogeneous and Heterogeneous Catalysts ................................................. 83
   Ayumu Onda

5  Catalytic Conversion of Lignocellulosic Biomass to Value-Added Organic Acids in Aqueous Media ................................. 109
   Hongfei Lin, Ji Su, Ying Liu and Lisha Yang

6  Catalytic Hydrothermal Conversion of Biomass-Derived Carbohydrates to High Value-Added Chemicals ...................... 139
   Zhibao Huo, Lingli Xu, Xu Zeng, Guodong Yao and Fangming Jin
Part III  Hydrothermal Conversion of Biomass into Fuels

7 Effective Utilization of Moso-Bamboo (*Phyllostachys heterocycla*) with Hot-Compressed Water ............................. 155
Satoshi Kumagai and Tsuyoshi Hirajima

8 Hydrothermal Liquefaction of Biomass in Hot-Compressed Water, Alcohols, and Alcohol-Water Co-solvents for Biocrude Production ...................................................... 171
Chunbao Charles Xu, Yuanyuan Shao, Zhongshun Yuan, Shuna Cheng, Shanghuang Feng, Laleh Nazari and Matthew Tymchyshyn

9 Hydrothermal Liquefaction of Biomass ........................................ 189
Saqib Sohail Toor, Lasse Aistrup Rosendahl, Jessica Hoffmann, Thomas Helmer Pedersen, Rudi Pankratz Nielsen and Erik Gydesen Søgaard

10 Hydrothermal Gasification of Biomass for Hydrogen Production ................................................................. 219
Jude A. Onwudili

Part IV  Hydrothermal Conversion of Biomass into Other Useful Products

11 Review of Biomass Conversion in High Pressure High Temperature Water (HHW) Including Recent Experimental Results (Isomerization and Carbonization) .............................. 249
Masaru Watanabe, Taku M. Aida and Richard Lee Smith

12 Hydrothermal Carbonization of Lignocellulosic Biomass ....... 275
Charles J. Coronella, Joan G. Lynam, M. Toufiq Reza and M. Helal Uddin

Part V  Hydrothermal Conversion of Biomass Waste into Fuels

13 Organic Waste Gasification in Near- and Super-Critical Water ................................................................. 315
Liejin Guo, Yunan Chen and Jiarong Yin
14 Hydrothermal Treatment of Municipal Solid Waste
for Producing Solid Fuel. ............................... 355
Kunio Yoshikawa and Pandji Prawisudha

15 Sewage Sludge Treatment by Hydrothermal Process
for Producing Solid Fuel. ............................... 385
Kunio Yoshikawa and Pandji Prawisudha
Application of Hydrothermal Reactions to Biomass Conversion
Jin, F. (Ed.)
2014, XIII, 409 p. 212 illus., 65 illus. in color., Hardcover
ISBN: 978-3-642-54457-6