Hydrogen production from biomass such as palm oil wastes is an attractive option due to its abundance in country such as Malaysia. Biomass thermal conversion processes such as biomass steam gasification with in-situ CO2 adsorption shows a great potential for renewable hydrogen production. Limited research focused on the utilization of palm waste material in steam gasification. The coverage is not limited to the design of fluidized bed but also touches on the unit performance, heat and mass transfer aspects of fluidized bed. In addition, design of experiment (DOE) is performed using Response Surface Methodology (RSM) in conjunction with Central Composite Rotatable Design (CCRD) using the Expert Design Version 8 software. The kinetic parameter evaluation of different chemical reactions i.e. char gasification, methanation, boudouard, methane steam reforming, water gas shift and carbonation reactions in ICA steam gasification is discussed. The book serves as reference materials for students, engineers and scientists working in the area of hydrogen production and biomass gasification.

In-situ Catalytic Adsorption

Suzana Yusup
Zakir Khan

Enhancement Of Bioh2 Production Via In-situ Catalytic Adsorption(ica)

Optimization and Kinetic Studies

Suzana Yusup

Dr Suzana Yusup is actively involved in biomass conversion research to fuels and biochemical focusing on green technology involving reaction and separation processes. She received her PhD in chemical engineering from University of Bradford, United Kingdom. Currently she is the Director of Green Technology at UNIVERSITI TEKNOLOGI PETRONAS, Malaysia.

978-3-659-40782-6

Yusup, Khan

LAP LAMBERT Academic Publishing