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## Experimental study of fast pyrolysis of rice husk in a fluidized bed reactor

**Wei-Cheng Wang**

National Cheng Kung University, Taiwan

In this study, system development and experimental investigation were conducted for the fluidized bed fast pyrolysis of rice husk. The design of a fluidized bed pyrolysis system, including a fluidized bed reactor, a feeder, a cyclone and a condenser was developed in detail for the purpose of improving the system performance and efficiency. Rice husk was chosen as the feedstock based on its availability in Taiwan. The product distributions were studied with varying temperature, carrier gas flow rate and biomass feeding. The results showed that the optimal experimental conditions for obtaining the maximum bio-oil yield were at the temperature between 400 °C and 450 °C, the flow rate of 45 L/min and biomass feeding of 21.3 g per inject time. The analysis of GC-MS indicated that the major components of bio-oil contain n-hexadecanoic acid, octadecanoic acid, 9-octadecenoic acid and decanoic acid. The element and property analysis of bio-oil demonstrated that the bio-oil has high oxygen content and low heating value. The analysis of GC-TCD showed that the major components of non-condensable gas are CO<sub>2</sub>, H<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>.

### Biography

Wei-Cheng Wang has completed his Master's degree at the Department of Mechanical Engineering and Mechanics in Lehigh University, PA, USA and PhD at the Department of Mechanical and Aerospace Engineering in North Carolina State University, USA. He has worked in National Renewable Energy Laboratory, Golden, CO, USA for 2 years. He is currently an Assistant Professor in the Department of Aeronautics and Astronautics, National Cheng Kung University, Tainan, Taiwan. His research interests are energy conversion and system integration. He has published 27 papers in peer-reviewed journals.

wilsonwang@mail.ncku.edu.tw

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