

## Accepted Manuscript

Investigating pyrolysis characteristics of moso bamboo through TG-FTIR and Py-GC/MS

Fang Liang, Ruijuan Wang, Xiang Hongzhong, Xiaomeng Yang, Tao Zhang, Wanhe Hu, Bingbing Mi, Zhijia Liu

PII: S0960-8524(18)30162-7

DOI: <https://doi.org/10.1016/j.biortech.2018.01.140>

Reference: BITE 19497

To appear in: *Bioresource Technology*

Received Date: 4 January 2018

Revised Date: 29 January 2018

Accepted Date: 30 January 2018



Please cite this article as: Liang, F., Wang, R., Hongzhong, X., Yang, X., Zhang, T., Hu, W., Mi, B., Liu, Z., Investigating pyrolysis characteristics of moso bamboo through TG-FTIR and Py-GC/MS, *Bioresource Technology* (2018), doi: <https://doi.org/10.1016/j.biortech.2018.01.140>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

# Investigating pyrolysis characteristics of moso bamboo through TG-FTIR and Py-GC/MS

Fang Liang, Ruijuan Wang, Xiang Hongzhong, Xiaomeng Yang, Tao Zhang, Wanhe Hu,

Bingbing Mi, Zhijia Liu\*

International Centre for Bamboo and Rattan, Beijing, China, 100102

#Co-First Author: Ruijuan Wang, equal contributor as first author

Corresponding author: Dr. Zhijia Liu, Liuzj@icbr.ac.cn, Tel: 86-10-84789869

**Abstract:** This study was carried out to investigate pyrolysis characteristics of moso bamboo (*Phyllostachys pubescens*), including outer layer (OB), middle layer (MB) and inner layer (IB) and bamboo leaves (BL), through TG-FTIR and Py-GC/MS. The results showed that 70% of weight loss occurred at rapid pyrolysis stage with temperature of 200-400 °C. With increase in heating rate, pyrolysis process shifted toward higher temperature. IB, OB, MB and BL had a different activation energy at different conversion rates. BL had a higher activation energy than IB, OB and MB. The volatiles of bamboo was complicated with 2-30 of C atoms. IB, OB and MB mainly released benzofuran, hydroxyacetaldehyde and 2-Pentanone. BL released furan, acetic acid and phenol. The main pyrolysis products included H<sub>2</sub>O, CH<sub>4</sub>, CO<sub>2</sub>, CO, carboxylic acids, NO, NO<sub>2</sub>. Pyrolysis products of IB was the most and that of BL was the lowest. MB had the lowest pyrolysis temperature.

**Keywords:** Moso bamboo; Pyrolysis; Kinetic; TG-FTIR; Py-GC/MS.

## 1. Introduction

Download English Version:

<https://daneshyari.com/en/article/7067923>

Download Persian Version:

<https://daneshyari.com/article/7067923>

[Daneshyari.com](https://daneshyari.com)