

**Supplemental File 1:** Supplementary materials and method to this study.

**Alkali Metal Salts Assisted Low-Temperature Pyrolysis of Reconstituted Tobacco Sheets: Research of Salt Addition and Reaction Kinetics, Low-Temperature Pyrolysis Mechanisms**

Yixuan Wang, Jia Du, Heng Xu, Erbin Wang, Haiying Tian, Lu Han, Xu Zhao, Wenzhao Liu, Shengtao Ma, Zaiyu Ge, Xuebin Zhao\*, Zhan Zhang\*

Technology Center, China Tobacco Henan Industrial Co., Ltd., Zhengzhou, 450000, China

Corresponding author:

zhaoxuebin116@163.com (Xuebin Zhao)

zhangzhan2059729@126.com (Zhan Zhang)

## **Materials**

In this study, reconstituted tobacco sheets for heated tobacco products were provided by China Tobacco Henan Industrial Co., Ltd., China. Aqueous phase filtration membrane was obtained from Zhengzhou Huaman Biotechnology Co., Ltd., China. Sodium acetate trihydrate ( $C_2H_3NaO_2 \cdot 3H_2O$ , AR) was purchased from Tianjin Fuchen Chemical Reagent Co., Ltd., China. Potassium acetate ( $C_2H_3KO_2$ , AR) was received from Shanghai Macklin Biochemical Co., Ltd., China. All the chemicals above were used directly as received. Deionized water was obtained via purification on one ultra-pure water machine (CS-5, Wuhan Jibari Technology Co., Ltd., China).

## **Instruments**

An additive amount of alkali metal salt in a reconstituted tobacco sheet was measured by an inductively coupled plasma-optical emission spectrometric analyzer (ICP-OES, Varian, United States). Pyrolysis gas constituent was measured by pyrolysis-gas chromatography-mass spectrometry technology on a combined equipment of a CDS Analytical Pyroprobe 5250 (Chemical Data Systems, United States) and a gas chromatography-mass spectrometer (GC-MS, Agilent 7890/5977A, United States). Thermogravimetric analysis of the reconstituted tobacco sheets containing metal alkali salt characterized by the thermo-gravimetric analyzer (Mettler Toledo TGA-2, Switzerland).