**Hierarchically porous tobacco midrib-based biochar prepared by a simple dual-templating approach for highly efficient Rhodamine B removal**

Xinyu Zhang a, Tingwei Zhang a, \*, Jiaqi Guo a, Mehraj Ahmad a, Hui Yang b, Xiankun Su b, Feng Huang c, Yongcan Jin a, Huining Xiao d, and Junlong Song a, \*

a International Innovation Center for Forest Chemicals and Materials and Jiangsu Co-Innovation Center for Efficient Processing and Utilization of Forest Resources, Nanjing Forestry University, Nanjing, 210037, China;

b Guizhou Academy of Tobacco Science, Guiyang, 550081, China

c Zhengzhou Tobacco Research Institute of CNTC, Zhengzhou, 450001, China

d Department of Chemical Engineering, University of New Brunswick, Fredericton, NB, E3B 5A3, Canada

\*Corresponding Author:

E-mail: [ztwei@njfu.edu.cn](mailto:ztwei@njfu.edu.cn), [junlong.song@gmail.com](mailto:junlong.song@gmail.com) (J. S.);

Tel.: +86-25-85428163, Fax: +86-25-85428689

**Table S1** Main chemical compositions of tobacco midrib and stem

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sample | Extractives (%) | |  | Lignin (%) | | |  | Carbohydrate (%) | | | | Ash (%) |
| Hot water | Benzene -alcohol |  | Klason | ASL | Total |  | Glu | Xyl | Arb | Total |
| Tobacco stem | 14.58 | 2.94 |  | 13.93 | 4.60 | 18.53 |  | 32.55 | 17.82 | 2.05 | 52.42 | 6.31 |
| Tobacco midrib | 59.24 | 4.56 |  | 2.90 | 5.48 | 8.38 |  | 21.61 | 11.86 | 1.95 | 35.42 | 12.98 |



**Fig. S1**. The standard absorbance curve of Rhodamine B

 

(b)

(a)

**Fig. S2**. TG and DTG of tobacco midrib (a) and tobacco stem (b).

 

 

**Fig. S3.** Data fitted by (a) pseudo-first-order, and (b) pseudo-second-order kinetic model for Rh B adsorption on TMB (Rh B solution V= 100.0 mL, TMB 15.0 mg, Temp. = 25.0°C). Data fitted by Langmuir isotherm (c) and Freundlich isotherm model (d).