

Accepted Manuscript

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PII: S0960-8524(17)32243-5
DOI: <https://doi.org/10.1016/j.biortech.2017.12.098>
Reference: BITE 19353

To appear in: *Bioresource Technology*

Received Date: 31 October 2017
Revised Date: 26 December 2017
Accepted Date: 27 December 2017

Please cite this article as: Cao, L., Yu, I.K.M., Chen, S.S., Tsang, D.C.W., Wang, L., Xiong, X., Zhang, S., Ok, Y.S., Kwon, E.E., Song, H., Poon, C.S., Production of 5-hydroxymethylfurfural from starch-rich food waste catalyzed by sulfonated biochar, *Bioresource Technology* (2017), doi: <https://doi.org/10.1016/j.biortech.2017.12.098>

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Production of 5-hydroxymethylfurfural from starch-rich food waste catalyzed by sulfonated biochar

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Abstract: Sulfonated biochar derived from forestry wood waste was employed for the catalytic conversion of starch-rich food waste (e.g., bread) into 5-hydroxymethylfurfural (HMF). Chemical and physical properties of catalyst were characterized by Fourier transform infrared spectroscopy (FTIR), thermogravimetric analysis (TGA), scanning electron microscopy (SEM), Brunauer-Emmett-Teller (BET) surface area, and elemental analysis. The conversion of HMF was investigated via controlling the reaction parameters such as catalyst loading, temperature, and reaction time. Under the optimum reaction conditions the HMF yield of 30.4 Cmol% (i.e., 22 wt% of bread waste) was achieved in the mixture of

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