Electronic Supplementary Information for

High Yield Production of 5–hydroxymethylfurfural from

Cellulose by High Concentration of Sulfates in Biphasic System

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This supporting information contains representative HPLC chromatograms of products, the external standard used and the GC-MS chromatograms.



1. Copies of representative chromatograms:

Figure S1 Typical HPLC analytical profiles of (A) aqueous solution measured by refractive index detector and (B) organic solution measured by UV detector.

Reaction condition: 1g cellulose, 40ml THF, 4ml water; 1.8mmol NaHSO₄ and 2.8mmol ZnSO₄; temperature 433K; reaction time 60min.

2. The used external standard:

The external standard method was built as follow: 1g cellobiose, D-glucose, D-fructose, HMF, furfural and levulinic acid were added into 1000ml of pure water to form a mother solution, and then this mother solution was diluted to 1.25times, 2.5times, 5times, 10times, 20times, 40times,

100times and 500times. All these samples were analyzed by HPLC, and a standard curve was obtained where the peak area is a function of concentration of each chemical. The retention times of glucose, fructose, levulinic acid, HMF and furfural are 10.1min, 10.9min, 18.3min, 36.6min and 55.9min, respectively. This standard curve was applicable for the concentration from 0.002g/L to 1g/L.

3. Copies of GC-MS of products



Figure S2 GC spectrum of products in organic phase.

Reaction condition: 1g cellulose, 40ml THF, 4ml water; 1.8mmol NaHSO₄ and 2.8mmol ZnSO₄; temperature 433K; reaction time 60min.



Figure S3 Mass spectrum of (a) HMF in the product and (b) standard HMF