Electronic Supplementary Information

Microwave assisted ionic liquid route to prepare high purity bivalent Mn_5O_8 nanoplates for 5-hydroxymethylfurfural oxidation

Lifang Chen,*[a] Ting Zhang,[a] Hongye Cheng,[a] Ryan M. Richards[b] and Zhiwen Qi[a]

[a] State Key Laboratory of Chemical Engineering, School of Chemical Engineering, East China University of Science and Technology, Shanghai 200237, P.R. China

[b] Department of Chemistry, Colorado School of Mines, Golden, Colorado 80401, USA.

Corresponding Author

*Email: lchen@ecust.edu.cn

Table S1 Crystal structural parameters of Mn_5O_8.

Atom	Type	x	y	z
Mn1	Mn +4	0	0	0.50
Mn2	Mn +4	0	0.262	0
Mn3	Mn +2	0.73	0	0.662
O1	O-2	0.098	0.234	0.394
O2	O-2	0.096	0	0.905
O3	O-2	0.611	0	0.925

Space group: C 1 2/m 1

a = 10.3470 Å, b = 5.7240 Å, c=4.8520 Å, $\alpha = 90°$, $\beta = 109.410°$, $\gamma = 90°$

V = 273.628 $Å^3$

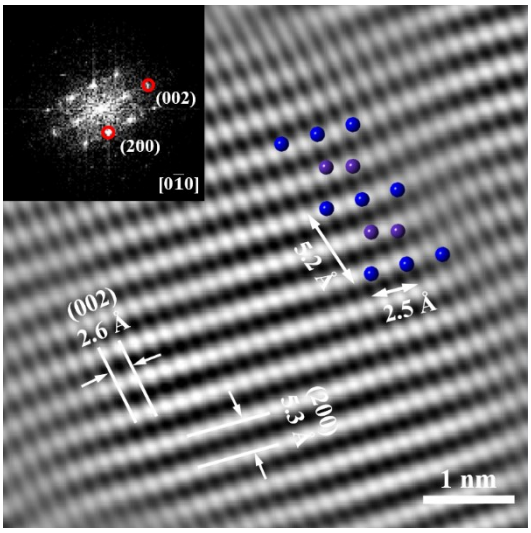

Fig. S1 Fast Fourier transform (FFT, inset) and inverse FFT (IFFT) image of Mn_5O_8.

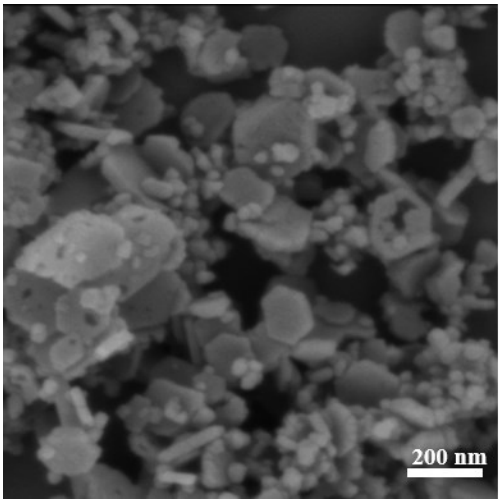

Fig. S2 SEM image of Mn_5O_8 by conventional hydrothermal method.

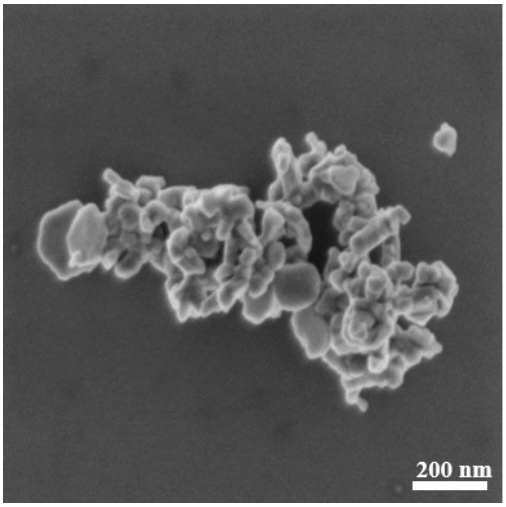

Fig. S3 SEM image of prepared Mn_5O_8 precursor.

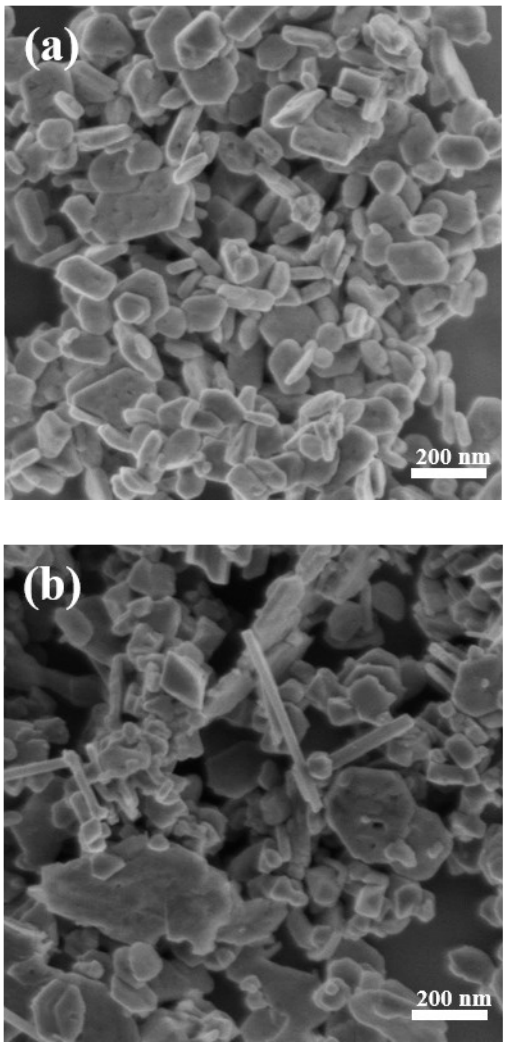

Fig. S4 SEM images of Mn_5O_8-[BMim]BF_4 (a) and Mn_5O_8-[BMim]PF_6 (b).

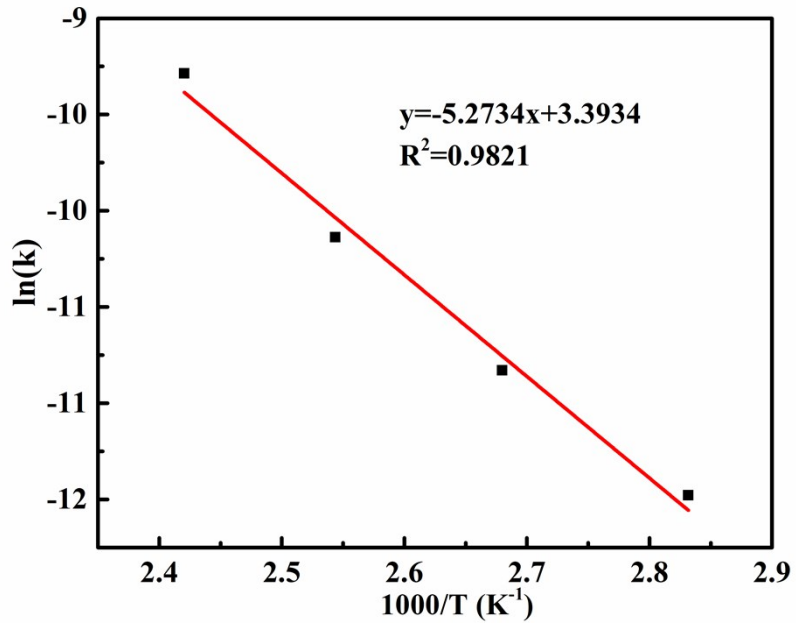

Fig. S5 Arrhenius plot for the aerobic oxidation of HMF.

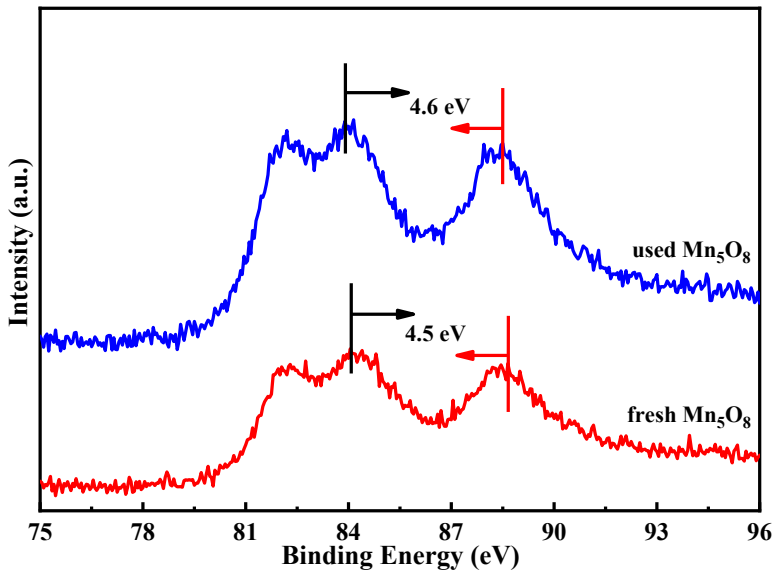

Fig. S6 XPS spectrum Mn 3s of fresh and used Mn_5O_8 samples.