# Supporting Information

## Highly efficient Ni-NiO/carbon nanotubes catalysts for the selective transfer hydrogenation of 5-hydroxymethylfurfural to 2, 5-bis(hydroxymethyl)furan

*Zixuan Liu, Zexing Huang, Wenguang Zhao , Xianxiang Liu**

National & Local Joint Engineering Laboratory for New Petro-chemical Materials and Fine Utilization of Resources, Key Laboratory of the Assembly and Application of Organic Functional Molecules of Hunan Province, Hunan Normal University, Changsha 410081, P. R. China.

*Corresponding author: lxx@hunnu.edu.cn (X.X. Liu)

**Table S1** Catalytic performances of different catalysts for the CTH of HMF.

| Entry | Catalyst | HMF Conversion (%) | Selectivity (%) | | |
|---|---|---|---|---|---|
| | | | BHMF | EMHF | BEMF |
| 1 | Ni/CNTs | 72.4 | 66.0 | 30.5 | 3.5 |
| 2 | NiO/CNTs | 99.8 | 76.0 | 22.7 | 1.3 |
| 3 | Ni-NiO/CNTs | 100.0 | 96.9 | 2.5 | 0.5 |

**Table S2** Comparison results for the CTH of HMF to BHMF using different catalysts

| Entry | Catalyst | H-donor | T (℃) | t (h) | BHMF yield (%) | Ref. |
|---|---|---|---|---|---|---|
| 1 | Ni−NiO/CNTs | ethanol | 160 | 1 | 96.8 | This work |
| 2 | CuO-$Fe_3O_4$/AC | iso-propanol | 150 | 5 | 92.3 | [1] |
| 3 | RuCu@NFC | iso-propanol | 210 | 12 | 88.8 | [2] |
| 4 | Ru/$Co_3O_4$ | iso-propanol | 190 | 6 | 82.0 | [3] |
| 5 | MnO@C-N | iso-propanol | 170 | 21 | 93.0 | [4] |
| 6 | Zr-DTMP | 2-butanol | 140 | 3 | 96.5 | [5] |

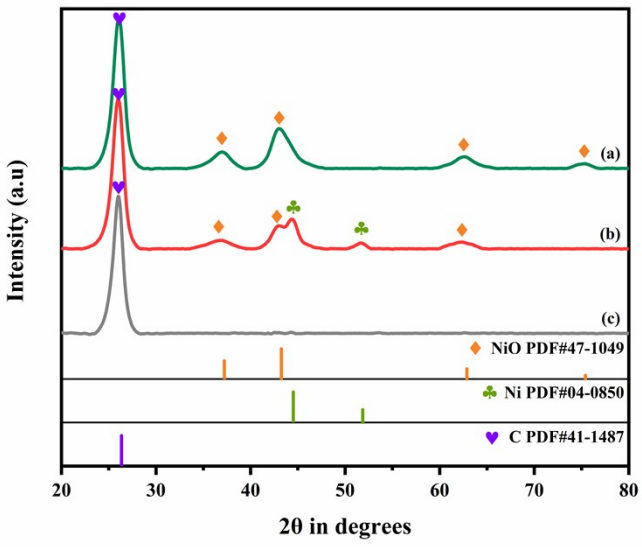


**Fig. S1.** XRD spectra of (a) NiO/CNTs catalyst calcinated in $N_2$ atmosphere, (b) Ni-NiO/CNTs catalyst calcinated in $H_2$/Ar atmosphere, and (c) CNTs.

## References


[1] I. Elsayed, M. A. Jackson and E. B. Hassan, *ACS Sustain. Chem. Eng.*, 2020, **8**, 1774-1785.

[2] J. Zhang, W. Xie, Q. Liang, L. Peng and L. He, *ChemistrySelect*, 2019, **4**, 2846-2850.

[3] T. Wang, J. Zhang, W. Xie, Y. Tang, D. Guo and Y. Ni, *Catalysts*, 2017, **7**, 92.

[4] Y. Feng, S. Long, G. Yan, B. Chen, J. Sperry, W. Xu, Y. Sun, X. Tang, X. Zeng and L. Lin, *J. Catal.*, 2020, **389**, 157-165.

[5] L. Hu, N. Li, X. Dai, Y. Guo, Y. Jiang, A. He and J. Xu, *J. Energy Chem.*, 2019, **37**, 82-92.