

Supporting Information

Highly selective production of biofuel 2, 5-dimethylfuran from 5-hydroxymethylfurfural over Co/N–C catalysts

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Table S1. Comparison of $\text{Co}_{0.25}/\text{N-C-500}$ catalytic hydrogenation activity of HMF under different calcination atmospheres.

Entry	Catalyst	Calcination atmosphere	Conv. (%)	Sel. (%)		
				5-MF	DMF	Others
1	$\text{Co}_{0.25}/\text{N-C-500}$	H_2	100.0	0.7	90.5	8.8
2	$\text{Co}_{0.25}/\text{N-C-500}$	N_2	14.0	11.1	23.2	65.7

Table S2. Difference calcination temperatures in the hydrogenation of HMF

Entry	Calcination temperatures	Conv. (%)	Sel. (%)		
			5-MF	DMF	Others
1	$\text{Co}_{0.25}/\text{N-C-450}$	93.7	17.3	8.1	74.6
2	$\text{Co}_{0.25}/\text{N-C-500}$	100.0	0.7	90.5	8.8
3	$\text{Co}_{0.25}/\text{N-C-550}$	92.0	13.5	21.8	64.7
4	$\text{Co}_{0.25}/\text{N-C-600}$	62.9	17.2	2.8	80

Reaction conditions: 1 mmol HMF, 40 mg catalyst, 10 mL THF, 180 °C, 8h, 0.5 MPa

H_2 . Others refer to MFA, BHMF, and DMTHF.

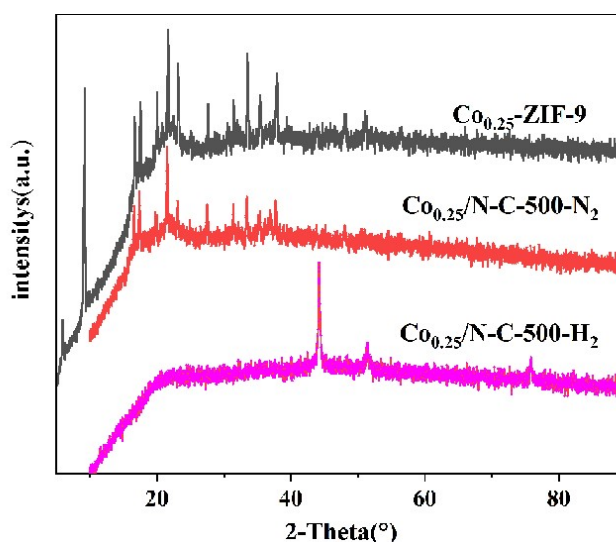


Fig.S1. XRD patterns of $\text{Co}_{0.25}\text{-ZIF-9}$ and $\text{Co}_{0.25}/\text{N-C}$ prepared under different calcination atmospheres.

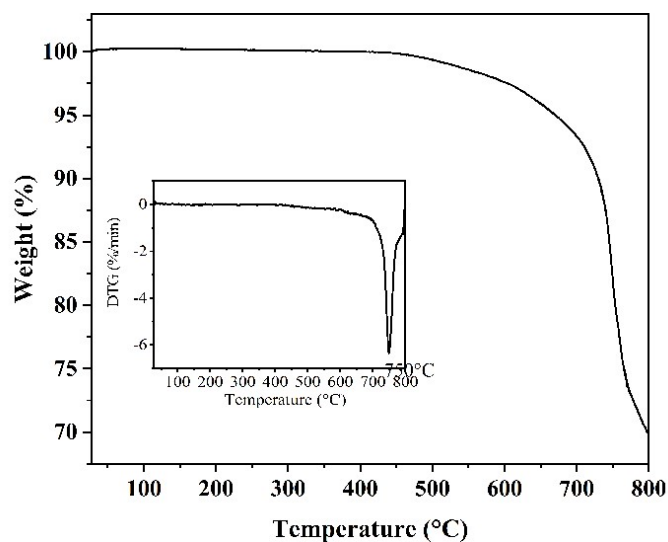


Fig. S2. TG curves of Co-ZIF-9 precursor.

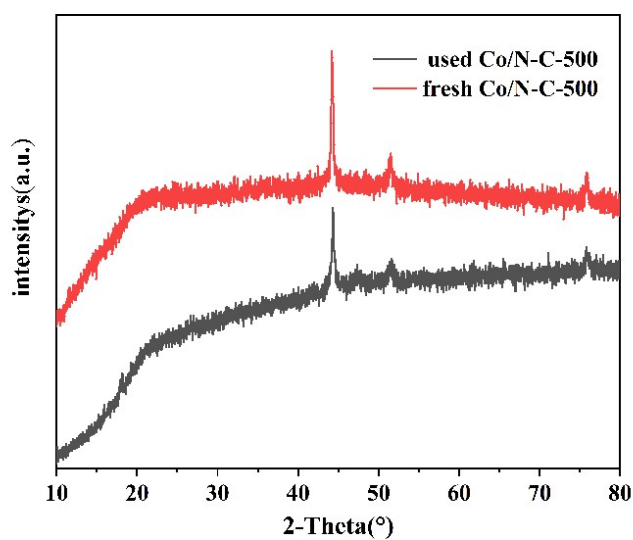


Fig. S3. XRD patterns of the used catalyst and the fresh catalyst.

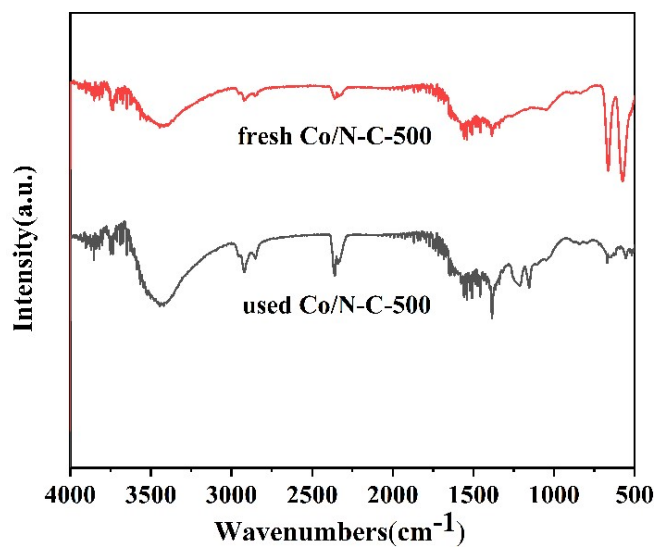


Fig. S4. FT-IR spectra of the used catalyst and the fresh catalyst.

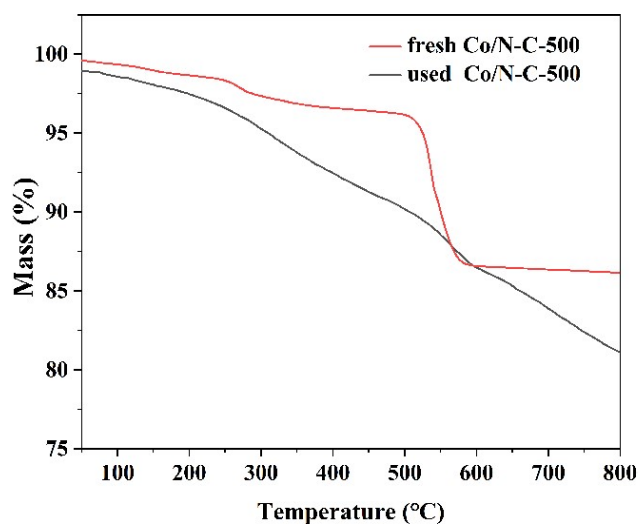


Fig. S5. TG curves of the used catalyst and the fresh catalyst.

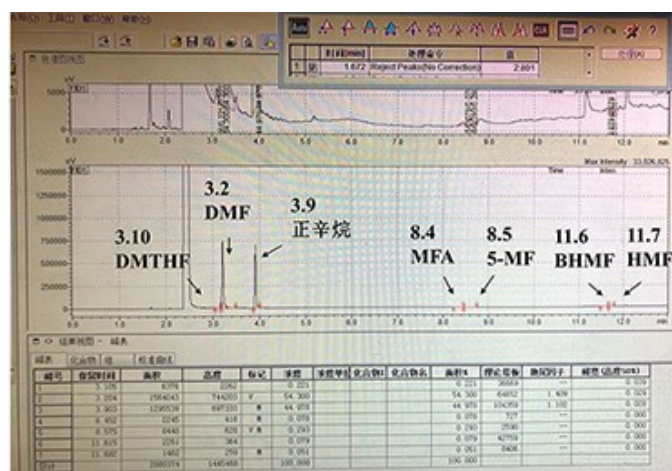


Fig. S6. Distribution of selective hydrogenation products of HMF by GC-MS.