Supporting Information

Experimental

N_2O pulse chemisorption

The Cu characteristics were determined by N_2O pulse chemisorption on a chemical adsorption instrument (PCA-1200, Builder, China). Before the measurement, the catalyst was reduced at 473 K for 2 h in H_2. The N_2O chemisorption was carried out with 3 vol% N_2O/He mixture. The Cu surface area was calculated by assuming a N_2O/Cu molar stoichiometry of 0.5:1 and a Cu surface density of 1.46×10^{19} Cu atom/m^2.

The metal surface area (MSA), metal dispersion (D_{Cu}) and particle size (d_{Cu}) of Cu were calculated as

$$\mathrm{MSA} = \frac{2 \times \mathrm{N_2O\ adsorption} \times N_A}{1.46 \times 10^{19}} \quad (1)$$

$$D_{Cu} = \frac{n_{\mathrm{surface\ Cu}}}{n_{\mathrm{total\ Cu}}} \times 100\% \quad (2)$$

$$d_{Cu} = \frac{104}{D_{Cu}(\%)} \quad (3)$$

Analysis of the reaction products

The liquid products collected from the reaction mixture were analyzed by a gas chromatograph (Shimadzu GC-14C). The conditions for the analysis were as follows: a 50 m HP-PONA capillary column, a flame ionization detector, 30 mL/min N_2 flow as a carrier gas, detector temperature 533 K, and the oven temperature programmed from 313 K to 522 K at the speed of 10 K/min. The products were identified by gas chromatography/mass spectrometry (Agilent GC/MS 5890). The carbon balance of all examined catalysts was in the range of 93 to 98%.

The furfural conversion, the selectivity and yield of furfural alcohol were calculated using the formulas as follows:

$$\mathrm{Conversion} = \frac{n_{(\mathrm{furfural})before} - n_{(\mathrm{furfural})after}}{n_{(\mathrm{furfural})before}} \times 100\% \quad (4)$$

$$\mathrm{Selectivity} = \frac{n_{(\mathrm{furfuryl\ alcohol})}}{n_{(\mathrm{furfural})before} - n_{(\mathrm{furfural})after}} \times 100\% \quad (5)$$

$$\mathrm{Yield} = \frac{n_{(\mathrm{furfuryl\ alcohol})}}{n_{(\mathrm{furfural})before}} \times 100\% \quad (6)$$

Here, $n_{(\mathrm{furfural})before}$ is the initial furfural concentration in the reactor, $n_{(\mathrm{furfural})after}$ and $n_{(\mathrm{furfuryl\ alcohol})}$ are the furfural and furfuryl alcohol concentrations after the reaction, respectively.

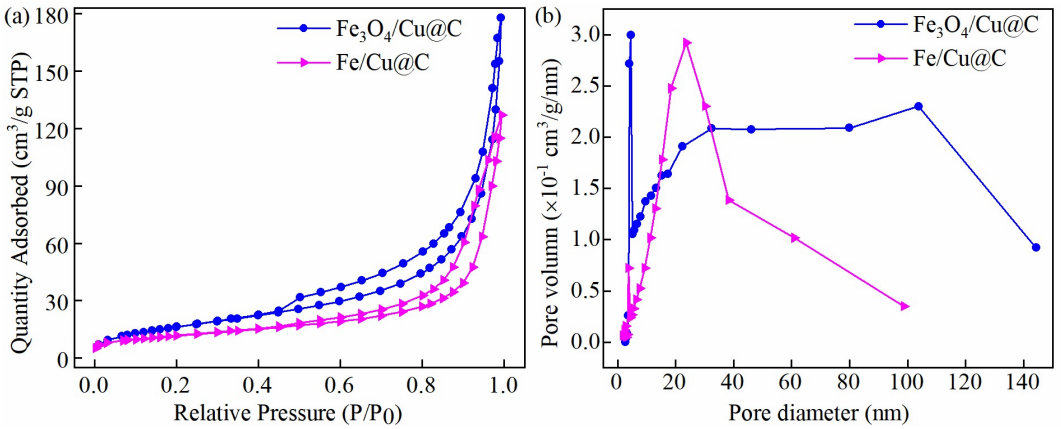

Fig. S1 (a) N_2 adsorption-desorption isotherms and (b) pore size distribution curves of Fe/Cu@C (Fe^{3+} 10 wt%) and Fe_3O_4/Cu@C (Fe^{3+} 10 wt%).

Table S1 Catalytic activity of this research compared to other literatures.

No.	Catalysts	Reaction conditions	Con. (%)	Sel.[a] (%)	Yield (%)	Ref.
1	Fe/Cu@C	20 mg catalyst, 1 mmol furfural, 10 mL *i*-propanol, 1MPa H_2, 457 K, 4 h	68.5	98.2	67.3	This work
2	Fe_3O_4/Cu@C	20 mg catalyst, 1 mmol furfural, 10 mL *i*-propanol, 1MPa H_2, 457 K, 4 h	86.3	99.6	86.0	This work
3	Cu/C	0.1 g catalyst, 0.6 g furfural, 15.4 g *i*-propanol, 443 K, 2 MPa H_2, 3 h	99.6	99.3	–	1
4	5 wt% Pd/MCM-41	2.1 mL furfural, 5 mL octane, 30 bar H_2, 413 K, 3 h	~51	~59	–	2
5	CuAl+MgO	0.04 g catalyst, 0.08 g furfural, 3.92 g ethanol, 100 μL NaOH solution (1.0 mol/L) 373 K, 5 MPa H_2, 2 h	100	98.5	98.5	3
6	Ni-Cu/SiO_2	0.2 g catalyst, 2.415 mmol furfural, 10 mL methanol, 20 bar H_2, 373 K, 2 h	63	68	43	4
7	Na-Cu@TS-1	0.3 g catalyst, 0.3 g furfural, 23.56 g *i*-propanol, 10 bar H_2, 383 K, 2 h	93.0	98.1	–	5
8	Pt3Fe/CeO_2	20 mg catalyst, 200 μL furfural, 10 mL *i*-propanol, 20 bar H_2, 373 K, 4 h	99.8	> 99.0	–	6

[a] Selectivity of furfuryl alcohol.

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