Supporting Information

Continuous synthesis of 2,2,6,6-tetramethyl-4-piperidinol over $CuCrSr/Al_2O_3$: Effect of Sr promoter

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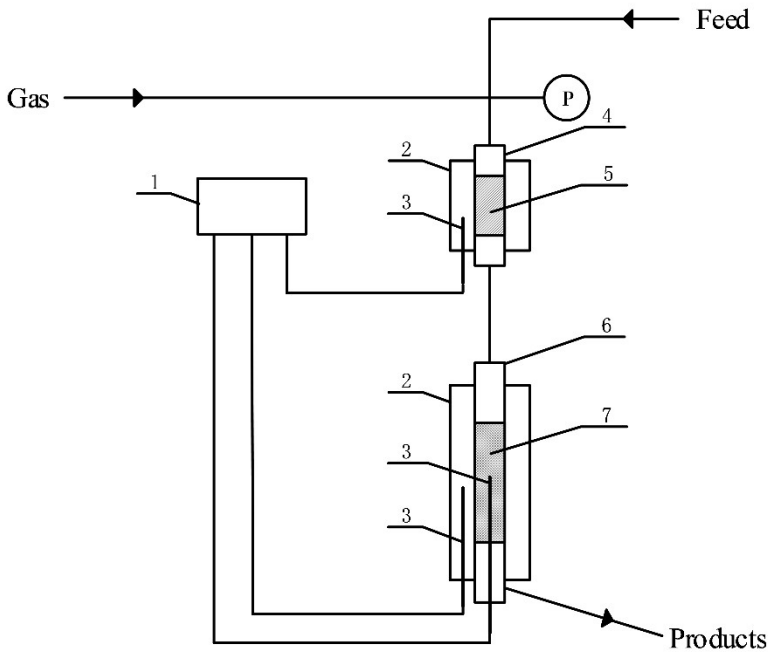
Section 1. Schematic diagram of catalytic performance evaluation apparatus



1.PID temperature controller, 2.Electrical heating, 3.Thermocouple,
4.Feed preheater, 5.Packing, 6.Fixed-bed reactor, 7.Catalyst

Fig.S1. Schematic diagram of catalytic performance evaluation apparatus

Section 2. N_2 adsorption-desorption isotherms and pore diameter of catalysts

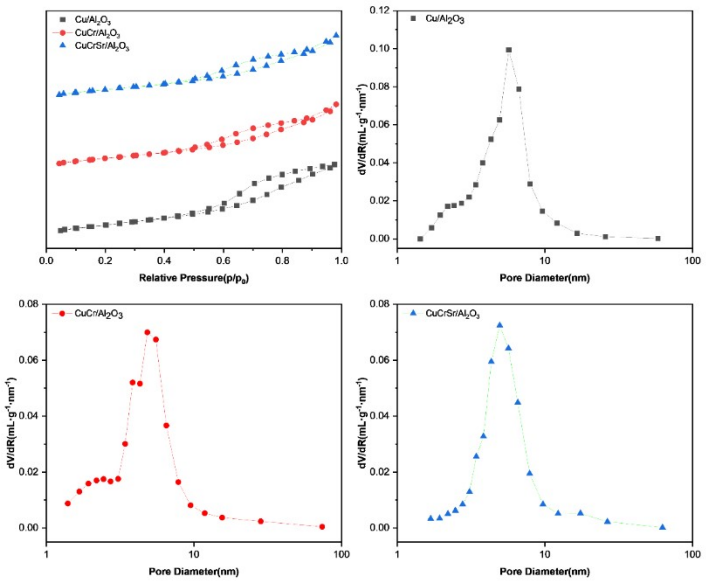


Fig.S2. N_2 adsorption-desorption isotherms and pore diameter of Cu-based catalysts

Section 3. XRD patterns and TEM image of catalysts after stability experiment

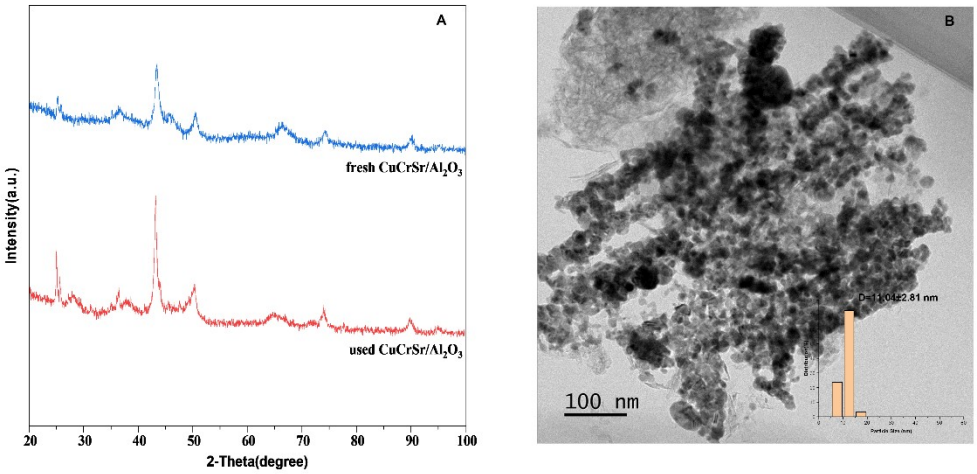


Fig.S3. XRD patterns (A) and TEM image (B) of $CuCrSr/Al_2O_3$ after stability experiment

Section 4. Numerical results of fitting peaks in Cu LMM spectra

Table S1. Numerical results of fitting peaks in Cu LMM spectra.

Catalysts	$X_{Cu^+/(Cu^0+Cu^+)}(\%)$
Cu/Al_2O_3	40.78
$CuCr/Al_2O_3$	46.23
$CuCrSr/Al_2O_3$	58.48

Section 5. Texture and structural properties of Cu-based catalysts

Table S2. Texture and structural properties of Cu-based catalysts.

Catalysts	Cu[a] (wt.%)	Cr[a] (wt.%)	Sr[a] (wt.%)	S_{BET}[b] ($m^2 \cdot g^{-1}$)	V_{pore}[b] ($cm^3 \cdot g^{-1}$)	D_{pore}[b] (nm)	Acidic sites concentration[c](mmol/g)				d_{XRD}[d] (nm)	d_{TEM}[e] (nm)
							Weak	M-strong	Strong	Total		
Cu/Al_2O_3	20.53	-	-	230.96	0.433	5.688	0.38	0.73	1.44	2.55	19.5	25.76
$CuCr/Al_2O_3$	18.57	4.43	-	198.86	0.383	4.955	0.35	0.86	1.02	2.23	17.1	23.71
$CuCrSr/Al_2O_3$	20.00	4.64	4.47	179.89	0.351	4.945	0.28	0.42	1.21	1.91	9.5	9.43

[a] Loading amounts were determined by ICP-OES;

[b] the specific surface area, pore volumes and pore sizes were calculated according to BET equation;

[c] determined by NH_3-TPD;

[d] determined by Debye-Scherrer equation;

[e] determined by TEM.