Supporting information

Highly Dispersed Co-based Fischer-Tropsch Synthesis Catalysts from Metal-Organic Frameworks

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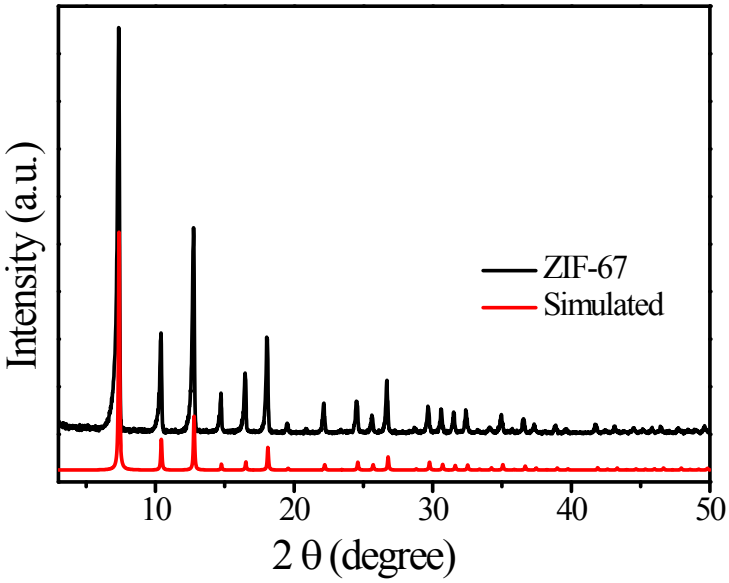

Fig. S1. PXRD pattern of ZIF-67

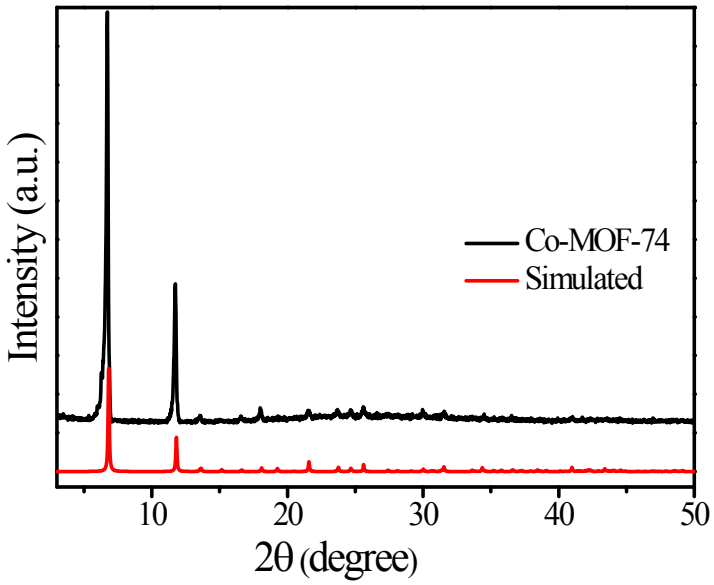

Fig. S2. PXRD pattern of Co-MOF-74

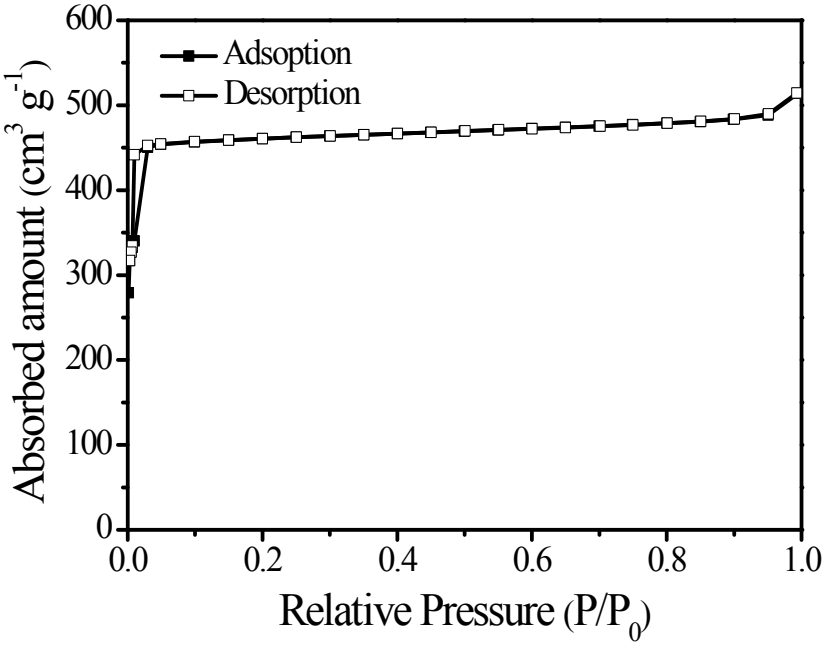

Fig. S3. N_2 adsorption-desorption isotherms of ZIF-67

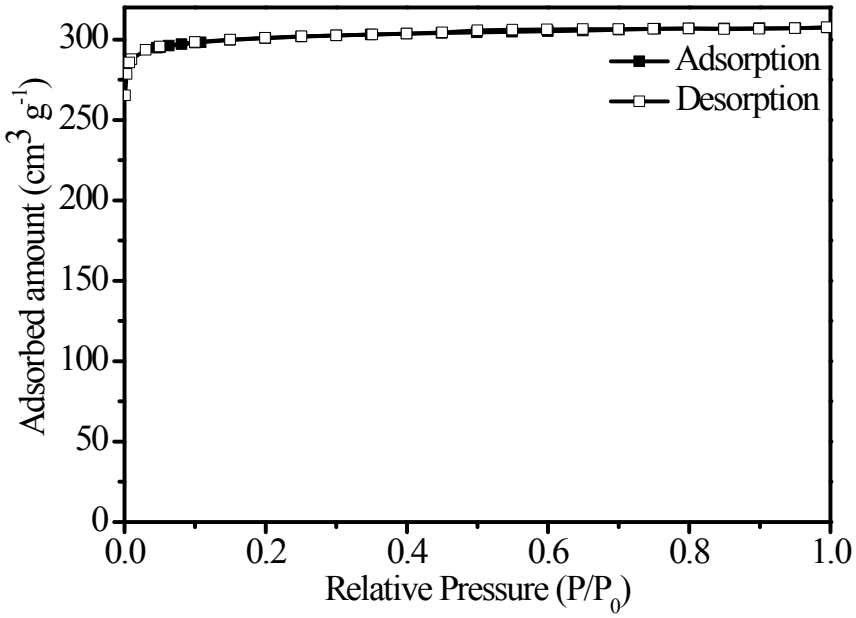

Fig. S4. N_2 adsorption-desorption isotherms of Co-MOF-74

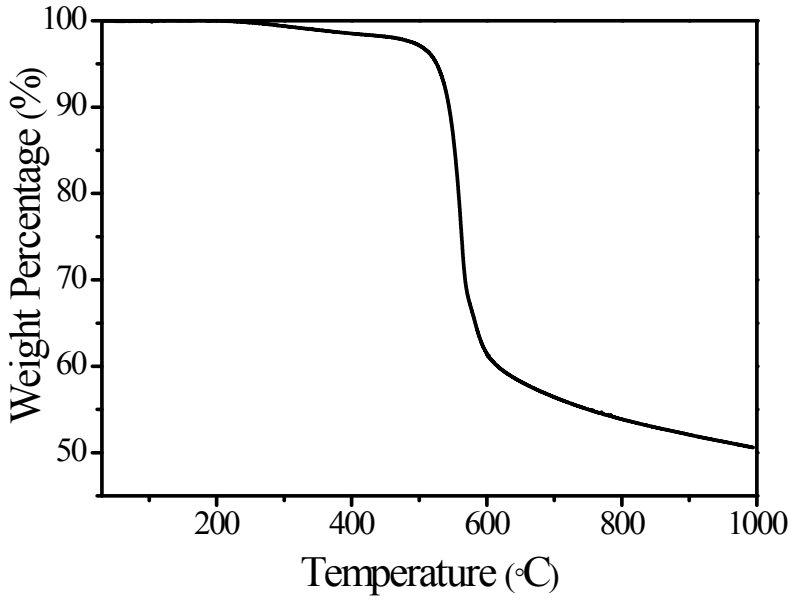

Fig. S5. Thermogravimetric analysis of ZIF-67 under N_2

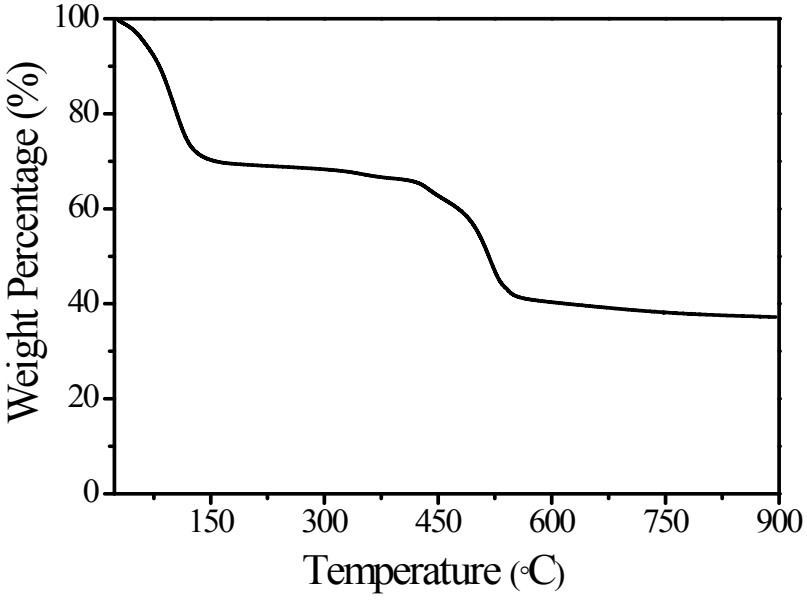

Fig. S6. Thermogravimetric analysis of Co-MOF-74 under N_2

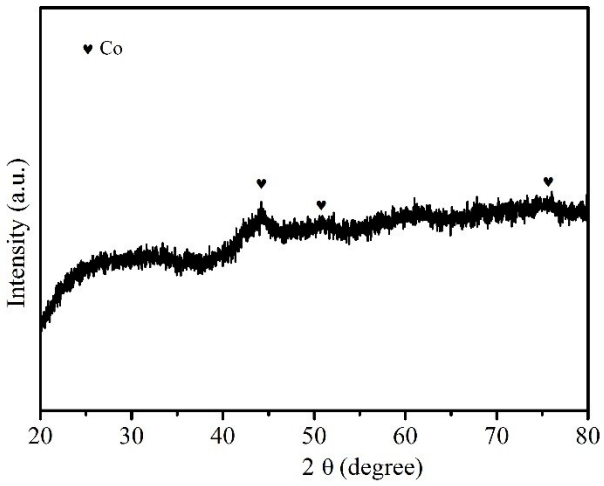

Fig. S7. PXRD patterns of Co@C-550 composites after 100 h test

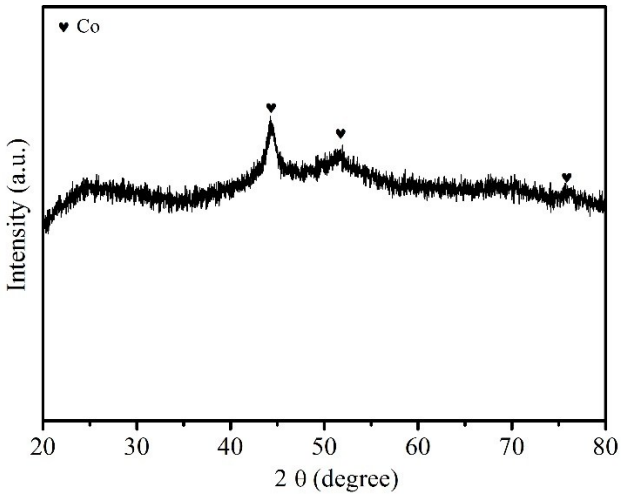

Fig. S8. PXRD patterns of Co@NC-550 composites after 100 h test

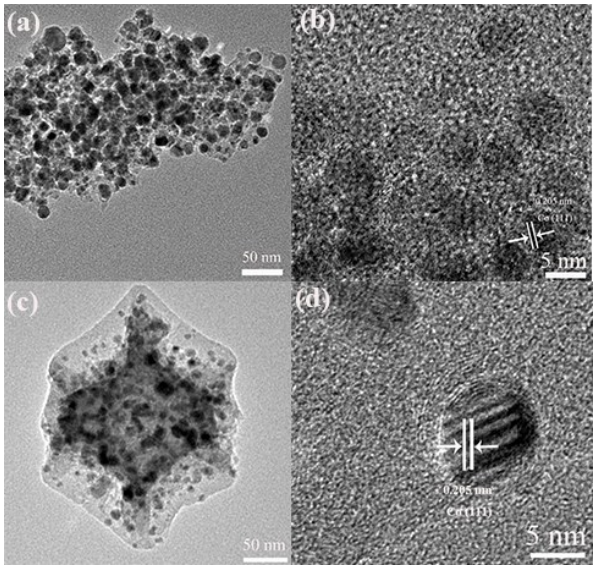

Fig. S9. (a) TEM images of Co@C-550 composites after 100 h test, (b) HRTEM images of Co@C-550 composites after 100 h test, (c) TEM images of Co@NC-550 composites after 100 h test and (d) HRTEM images of Co@NC-550 composites after 100 h test

Table S1. Fitting parameter for Co@NC-550 and Co@C-550 catalysts

Sample	Scattering	CN	DW	ΔE_0 (eV)	R (Å)
Co@NC-550	Co-N	2.48	9.03	-3.78	2.01
	Co-Co	5.00	7.25	-3.78	2.49
Co@C-550	Co-C	4.72	14.72	-3.00	2.11
	Co-Co	6.51	8.00	-3.00	2.50

Table S2. The contents of Co elements in pure MOFs and MOFs derived nanomaterials are measured by ICP-OES

	Co (wt %)
Co-MOF-74	19
Co@C-550	52
ZIF-67	25
Co@NC-550	30

Table S3. Comparison of the FTS catalytic activities of Co@C-550 and Co@NC-550 with the reported MOF-derived catalysts.

Catalyst	T (°C)	P (MPa)	GHSV	CO conversion (%)	CH_4	C_2-C_4	C_5^+	Ref
Fe-BTC derived Fe@C	340	2	30000 h^{-1}	72	14.6	29[a]	NA	11
Fe-BTC derived Fe@C	340	2	30000 h^{-1}	53	13	47[a]	NA	12
Fe-MIL-88B derived composites	300	2	36000 h^{-1}	33.8	11.5	25.1	63.4	13
Fe-MIL-88B-NH_2 derived composites	270	2	36000 h^{-1}	13.1	13.1	33.5	53.4	
Co@MIL-53(Al)	240	2	0.64 L $gcat^{-1}$ h^{-1}	23.8	13.3	13.5	67.7	32
ZIF-67 derived Co@NC	230	3	24 L $gcat^{-1}$ h^{-1}	10	22	37	31	This work
Co-MOF-74 derived Co@C	230	3	24 L $gcat^{-1}$ h^{-1}	30	18	10	65	This work

a: C_2-C_5

NA: Not Available