Electronic Supplementary Material

Carbon-coated Ni-Co alloy catalysts: preparation and performance for *in-situ* aqueous phase hydrodeoxygenation of methyl palmitate to hydrocarbons using methanol as the hydrogen donor

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Table

Table S1 Synthesis parameters of catalysts

Catalyst	$Ni(NO_3)_2·6H_2O$ /g	$Co(NO_3)_2·6H_2O$ /g	Formalin /mL	Ammonia /mL	Resorcinol /g
C	0	0	7.0	6.0	5.00
0.15Ni@C	3.27	0	7.0	6.0	5.00
$0.15Ni_2Co$@C	3.27	1.64	7.0	6.0	5.00
0.15NiCo@C	3.27	3.27	7.0	6.0	5.00
$0.15NiCo_2$@C	3.27	6.54	7.0	6.0	5.00
0.15Co@C	0	3.27	7.0	6.0	5.00
0.075NiCo@C	1.63	1.64	7.0	6.0	5.00
0.25NiCo@C	5.45	5.45	7.0	6.0	5.00
0.35NiCo@C	7.63	7.63	7.0	6.0	5.00

Figure

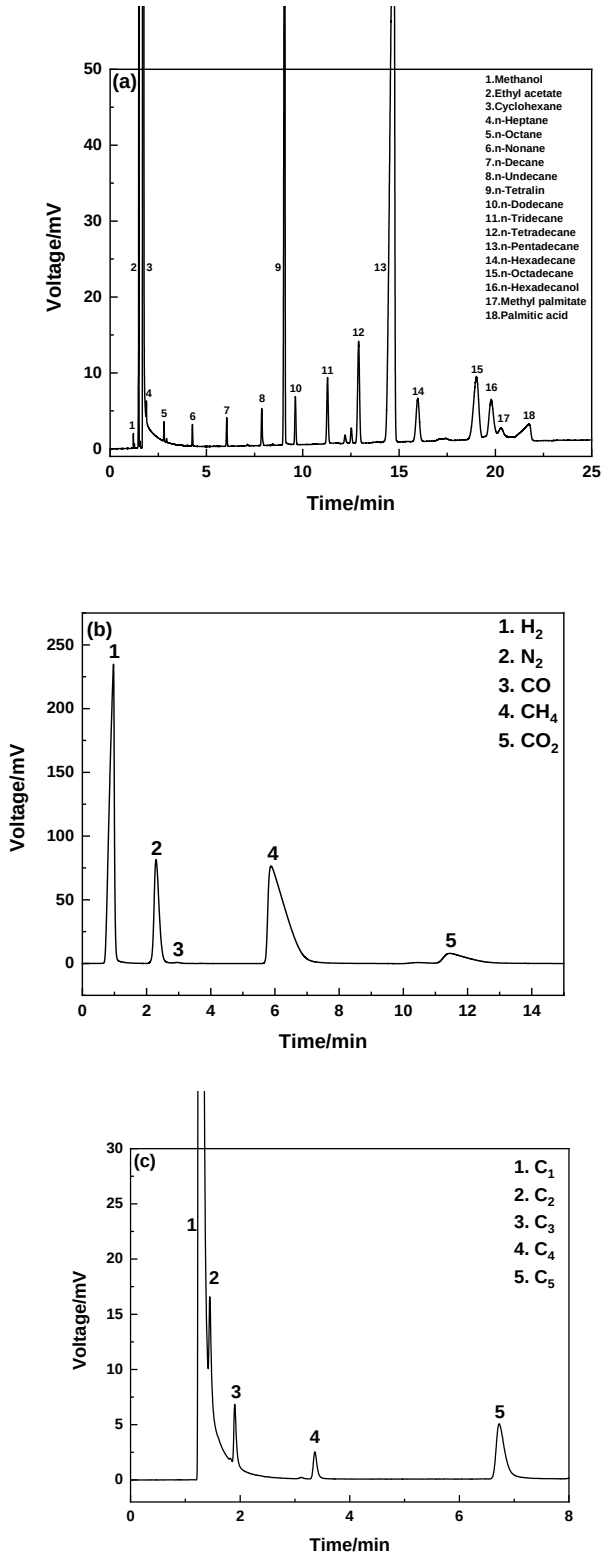

Fig. S1 Representative chromatograms of (a) In-situ hydrodeoxygenation liquid products of methyl palmitate; (b) H_2 and C_1 gaseous products; (c) light alkane C_1-C_5

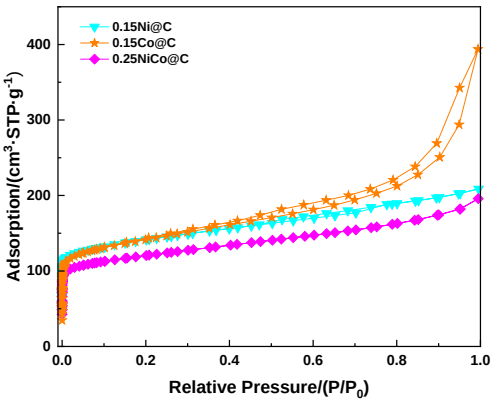

Fig. S2 N_2 adsorption-desorption isotherms of 0.15Ni@C, 0.25NiCo@C, and 0.15Co@C

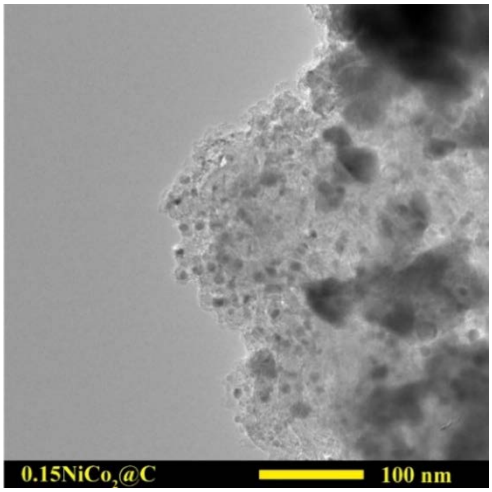

Fig. S3 TEM image of 0.15$NiCo_2$@C

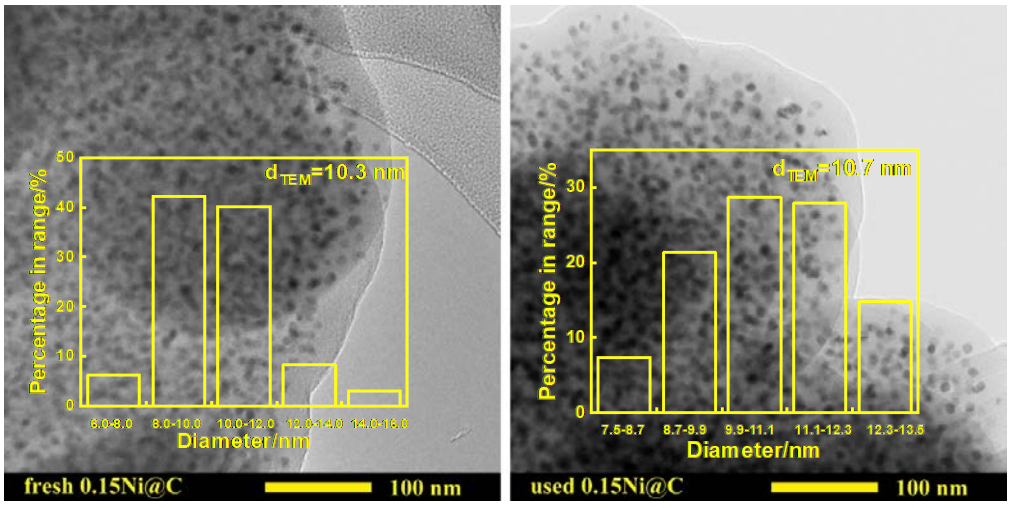

Fig. S4 TEM images of (a) fresh and (b) used 0.15Ni@C

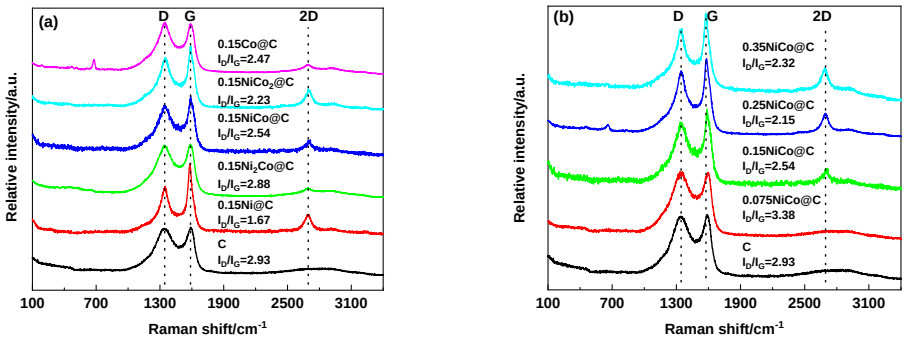

Fig. S5 Raman spectra of (a) pure C, 0.15Ni@C, 0.15Ni$_x$Co$_y$@C and 0.15Co@C; and (b) pure C and *w*NiCo@C

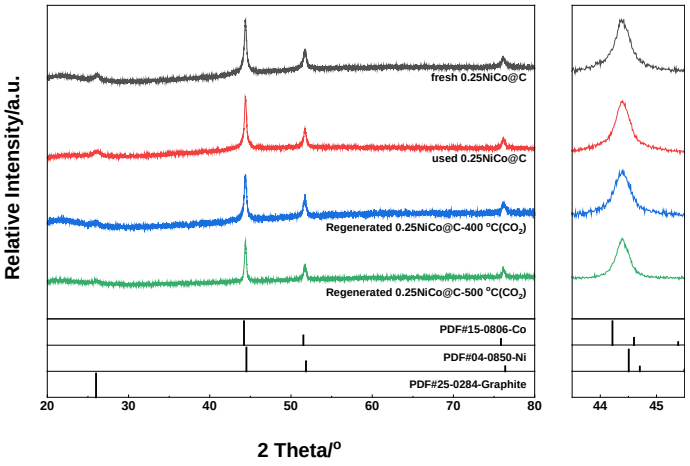

Fig. S6 XRD patterns of fresh and used 0.25NiCo@C and CO_2 regenerated 0.25NiCo@C

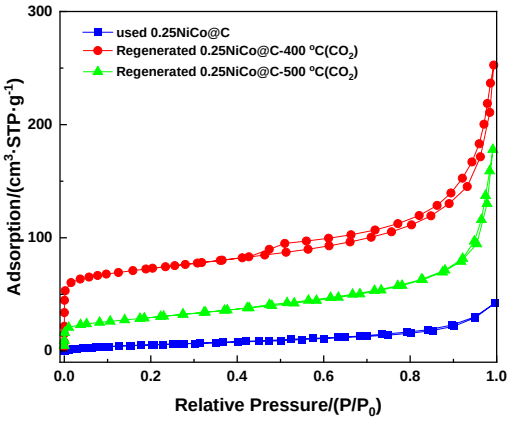

Fig. S7 N_2 adsorption-desorption isotherms of used 0.25NiCo@C and regenerated 0.25NiCo@C catalysts with CO_2

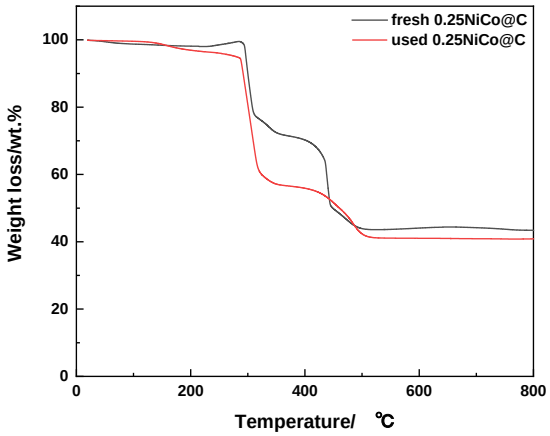

Fig. S8 TG profiles of fresh and used 0.25NiCo@C catalysts in an air flow

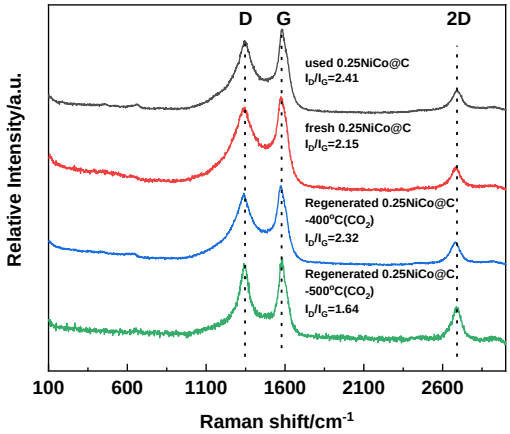

Fig. S9 Raman spectra of fresh and used 0.25NiCo@C before and after CO_2 treatment

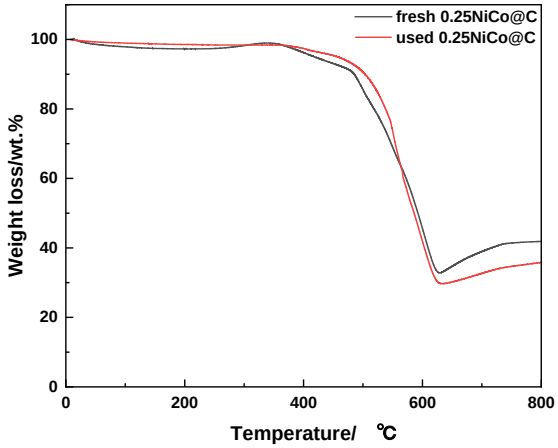

Fig. S10 TG profiles in CO_2 atmosphere of 0.25NiCo@C catalyst before and after the reaction

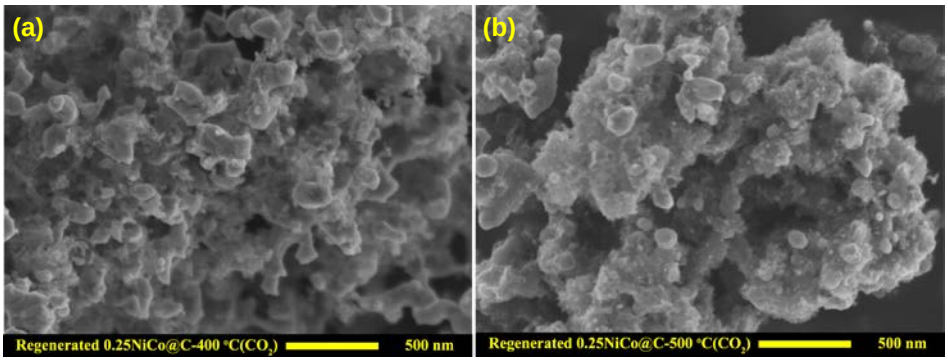

Fig. S11 SEM images of used 0.25NiCo@C after CO_2 treatment at (a) 400 ℃ and (b) 500 ℃

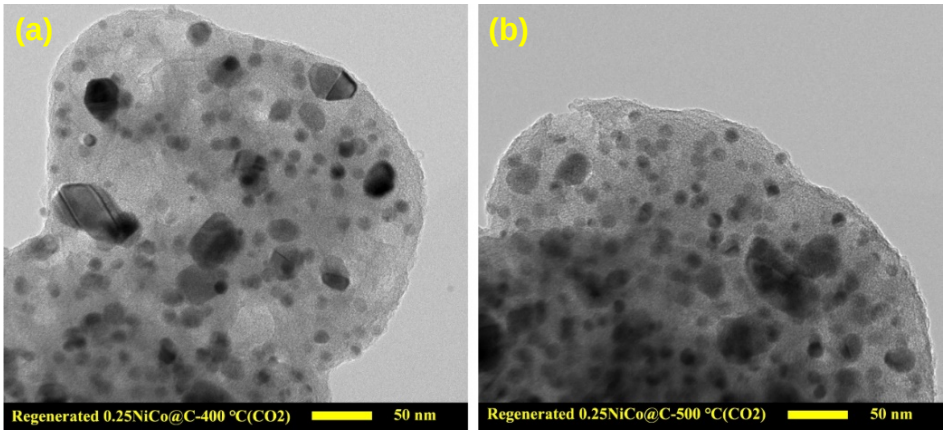

Fig. S12 TEM images of used 0.25NiCo@C after CO_2 treatment at (a) 400 ℃ and (b) 500 ℃