

Electronic Supporting Information

Synthesis of three-dimensional reduced graphene oxide layer supported cobalt nanocrystals and its high catalytic activity in F-T CO₂ hydrogenation

Fei He, Na Niu, Fengyu Qu, Shuquan Wei, Yujin Chen,^{*} Shili Gai, Peng Gao,^{*} Yan Wang, and
Piaoping Yang^{*}

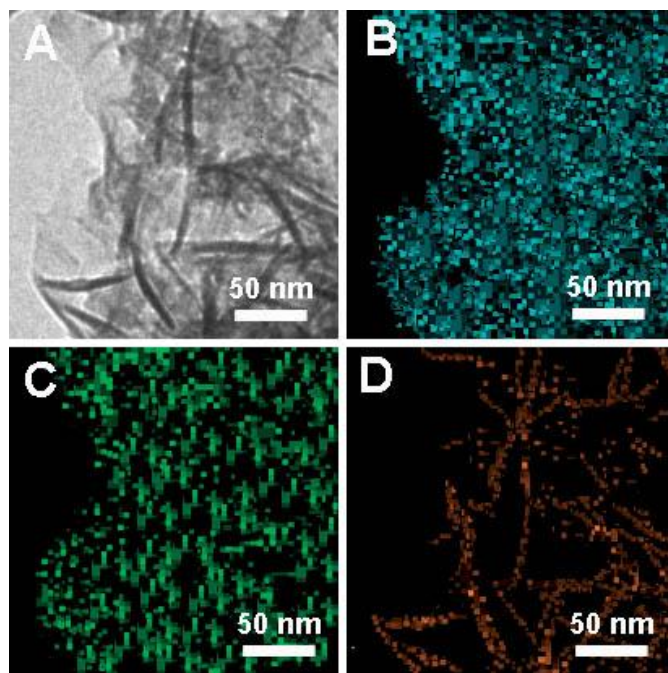


Fig. S1. TEM image (A), carbon (B), oxygen (C), and cobalt (D) element mapping of the Co/rGO composite fabricated at 220 °C.

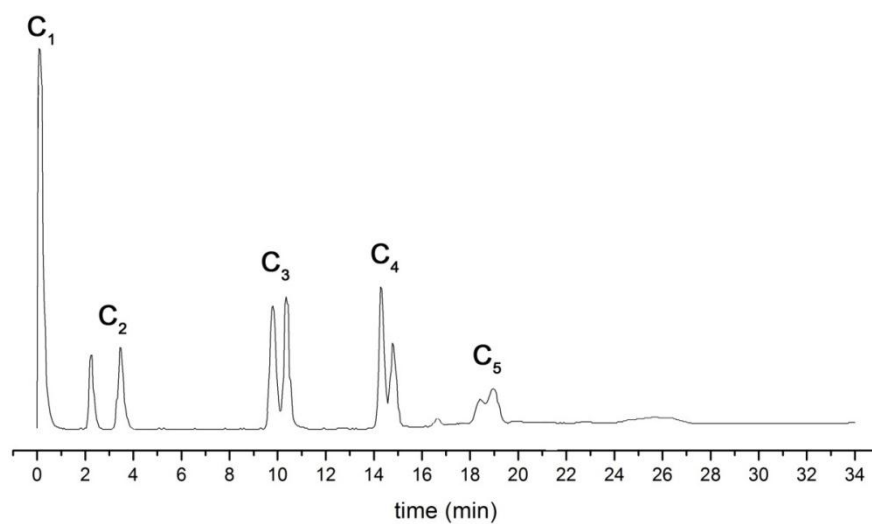


Fig. S2. The pattern of gases analysis by on-line chromatography of FID.

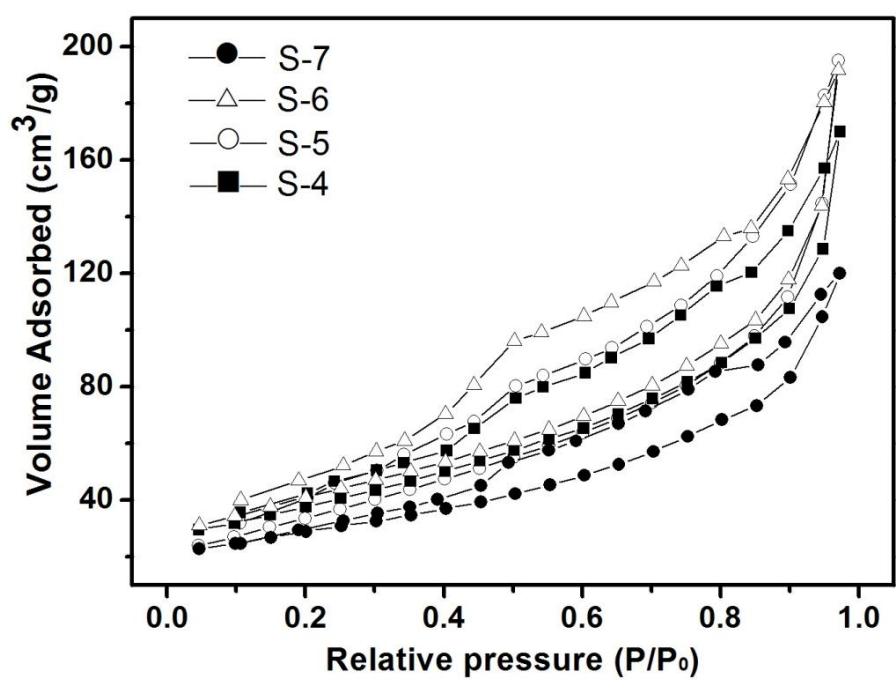


Fig. S3. Nitrogen adsorption/desorption isotherm of the Co/rGO composites (S-4, S-5, S-6, S-7).

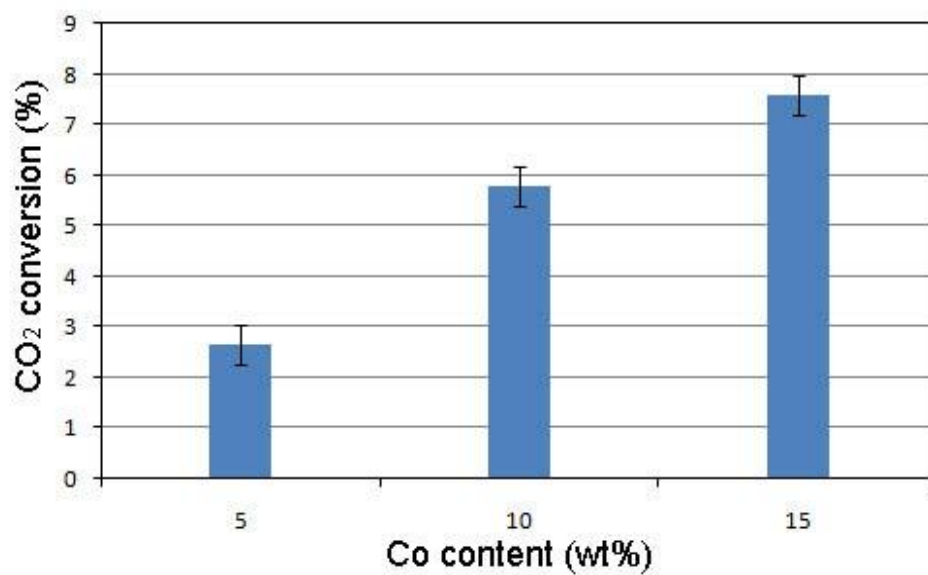
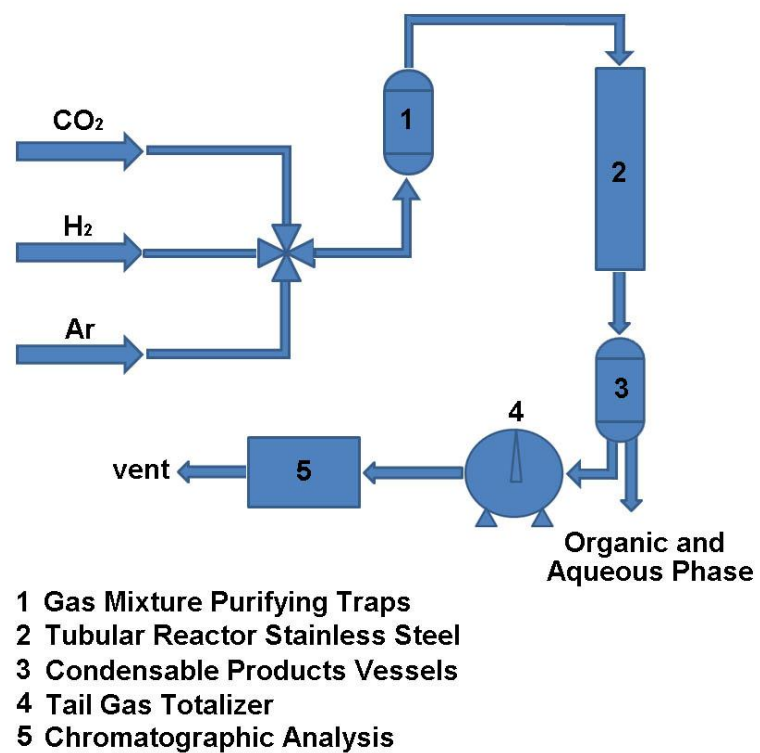


Fig. S4. Comparison catalysis activities of the composites prepared with different cobalt content (wt%) of 5, 10, 15 at synthesis temperature 220 °C for CO₂ hydrogenation reactions.

Table S1. Crystallite size, mass content of the Co metal in the Co/rGO catalysts (S-4, S-5, S-6, S-7) and the BET surface area of these catalysts

Samples	Crystallite size (nm)	Co content (wt %)	BET surface area (m ² /g)
S-4	20.7	19.2	128
S-5	23.7	19.7	132
S-6	24.9	19.6	136
S-7	23.9	20.0	89



Scheme S1. CO₂ hydrogenation process by using the Co/rGO composite as the catalyst.