

Supporting Information

Hydrogenation of furfural over biomass-based electron-deficient Co-NC nanotube catalyst

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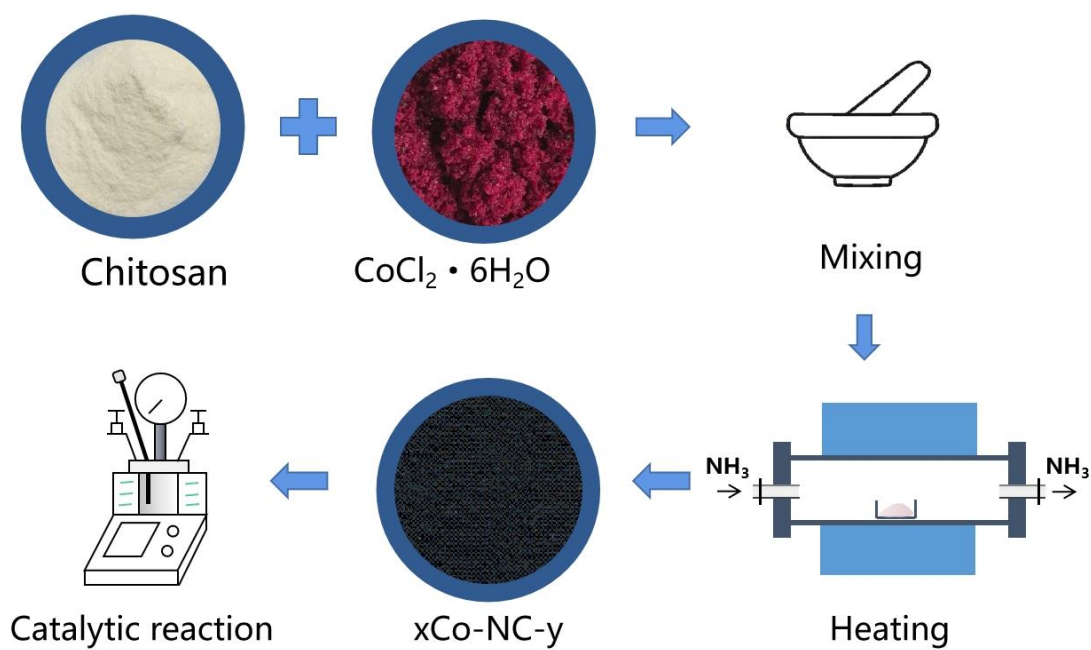


Figure S1. Synthesis procedure of Co-NC catalysts.

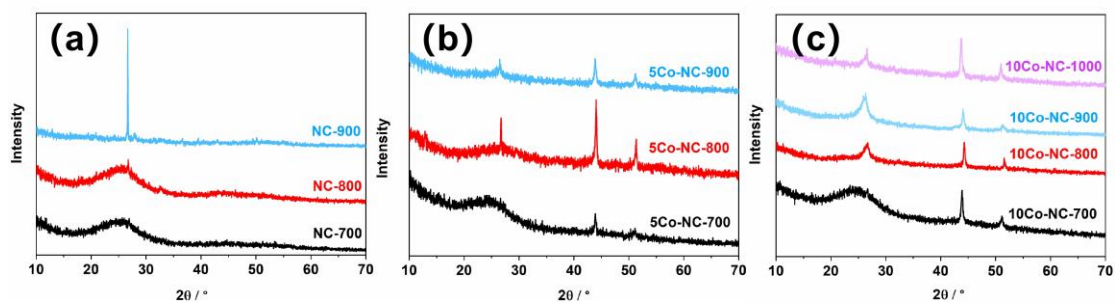
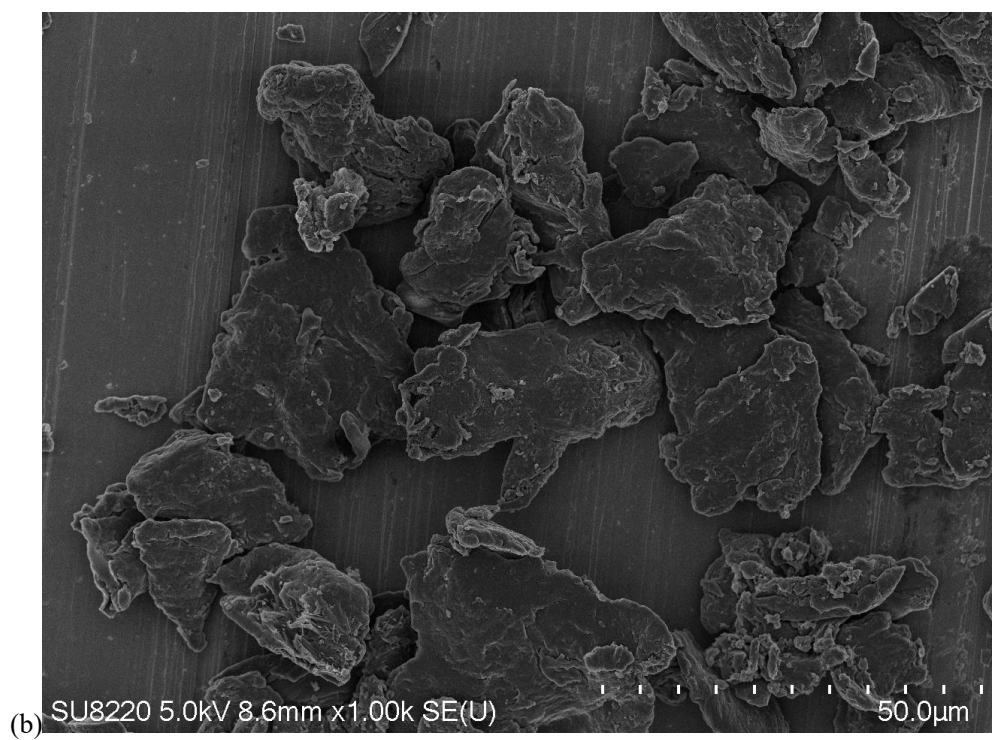
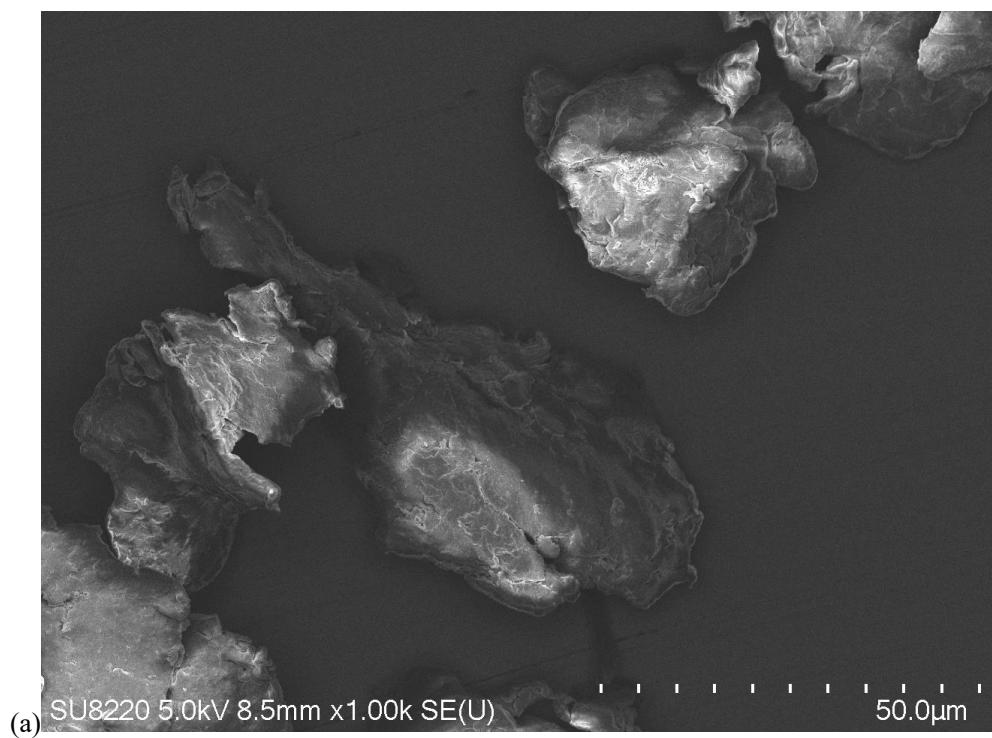
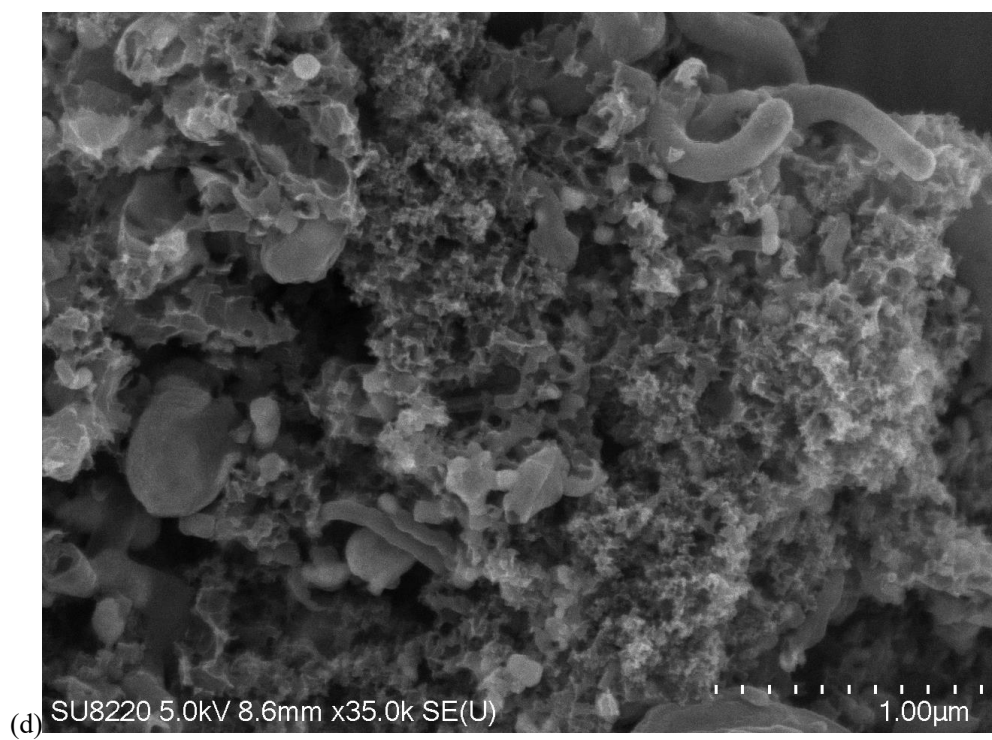
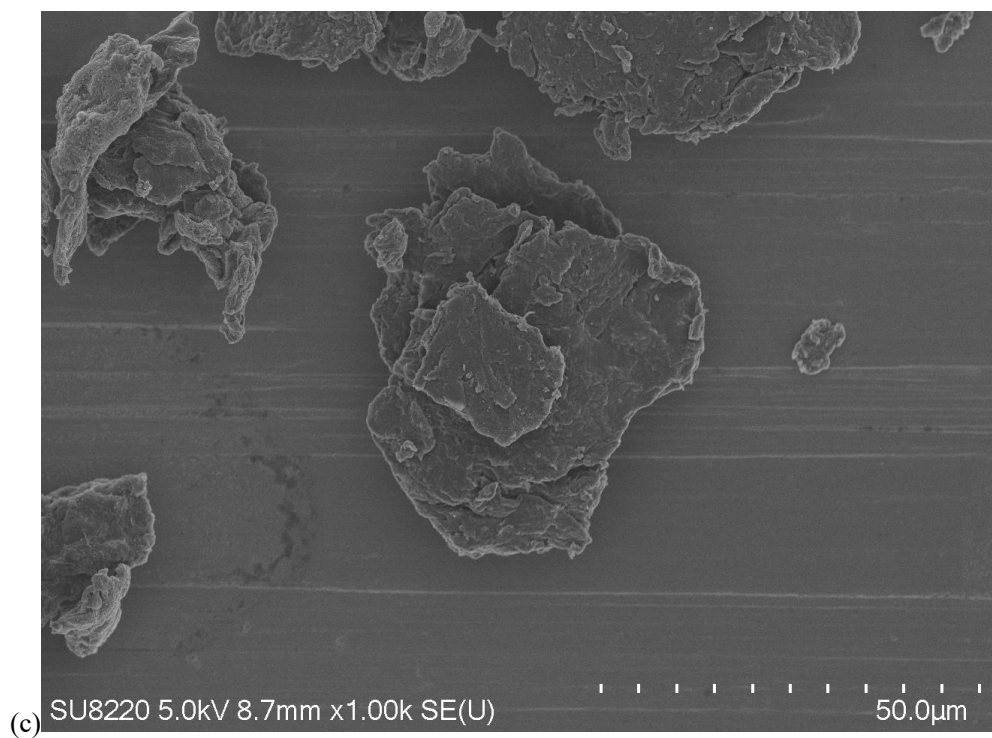
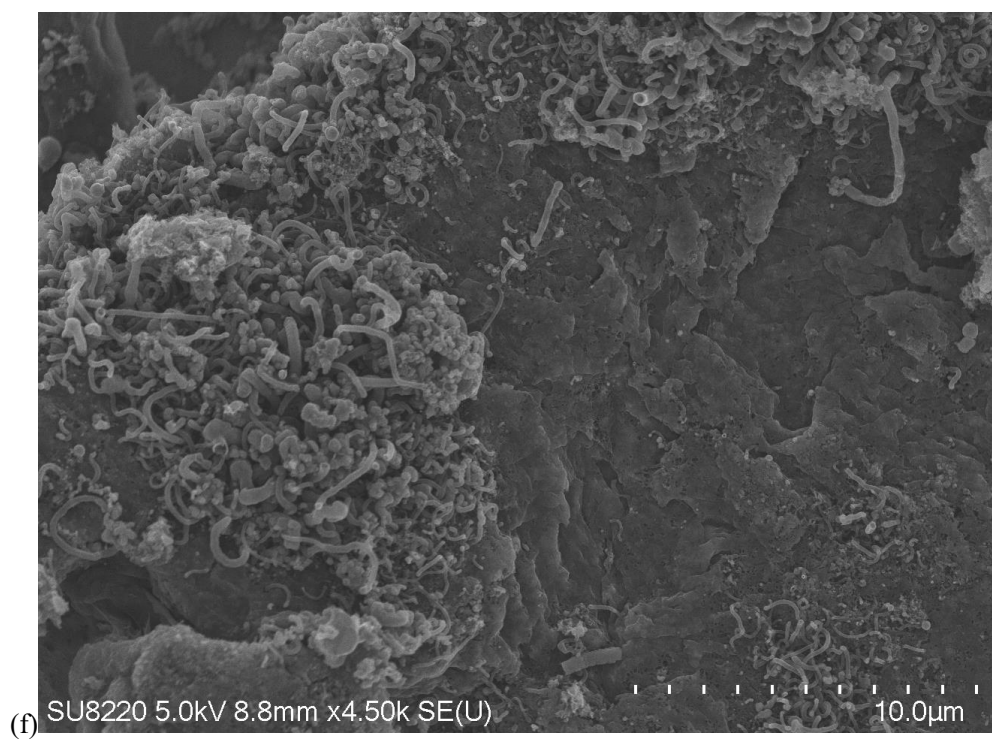
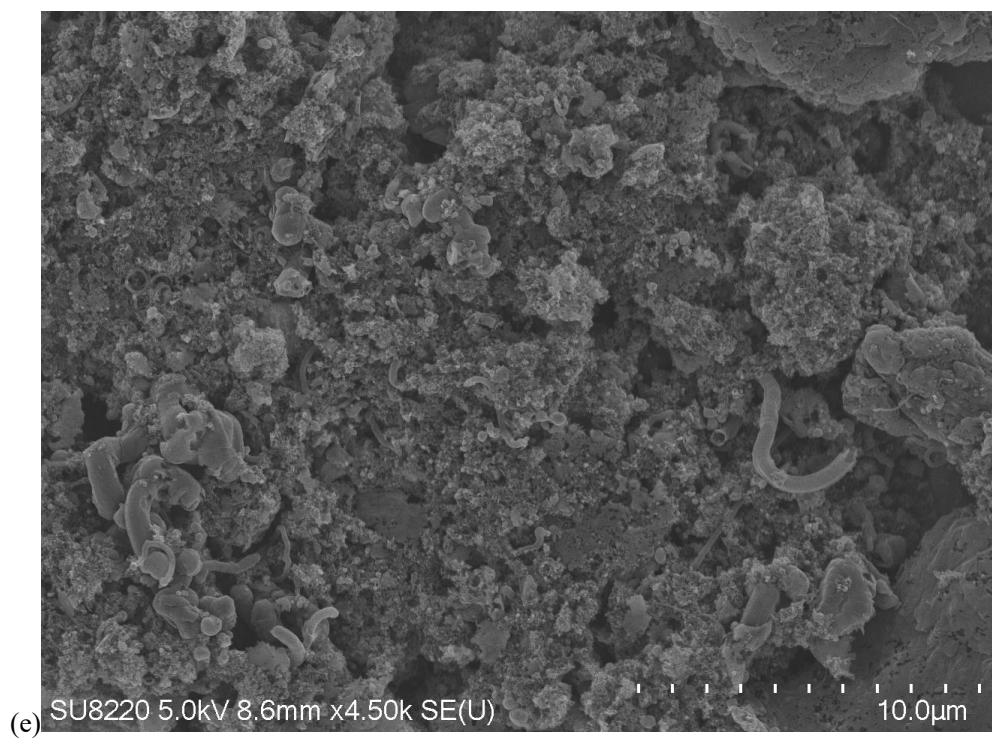
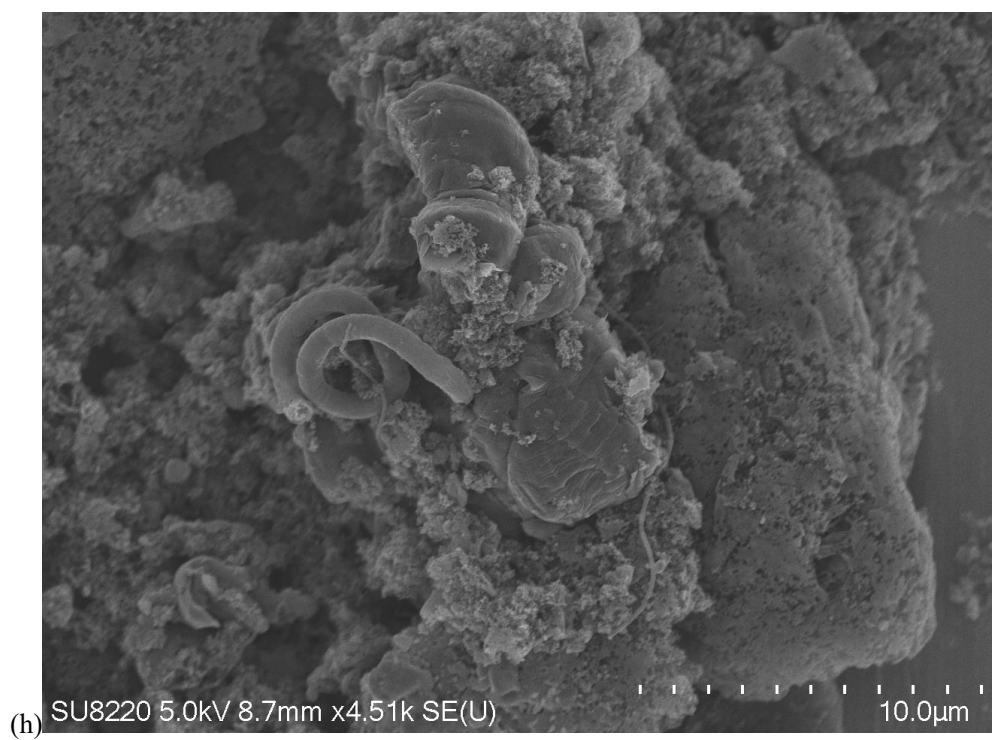
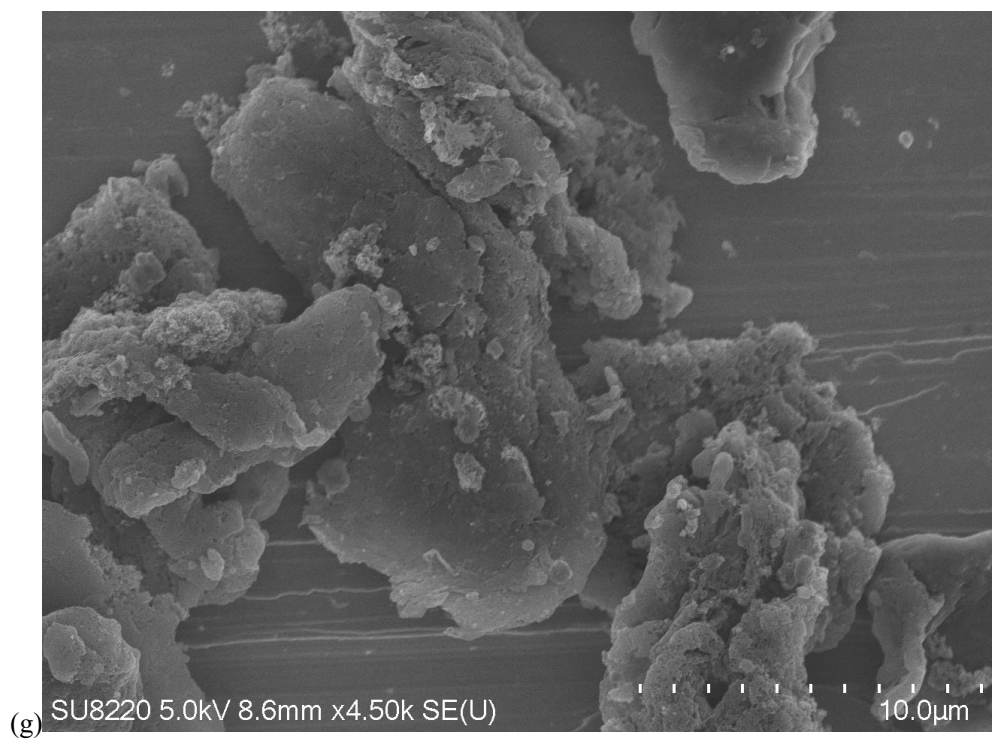


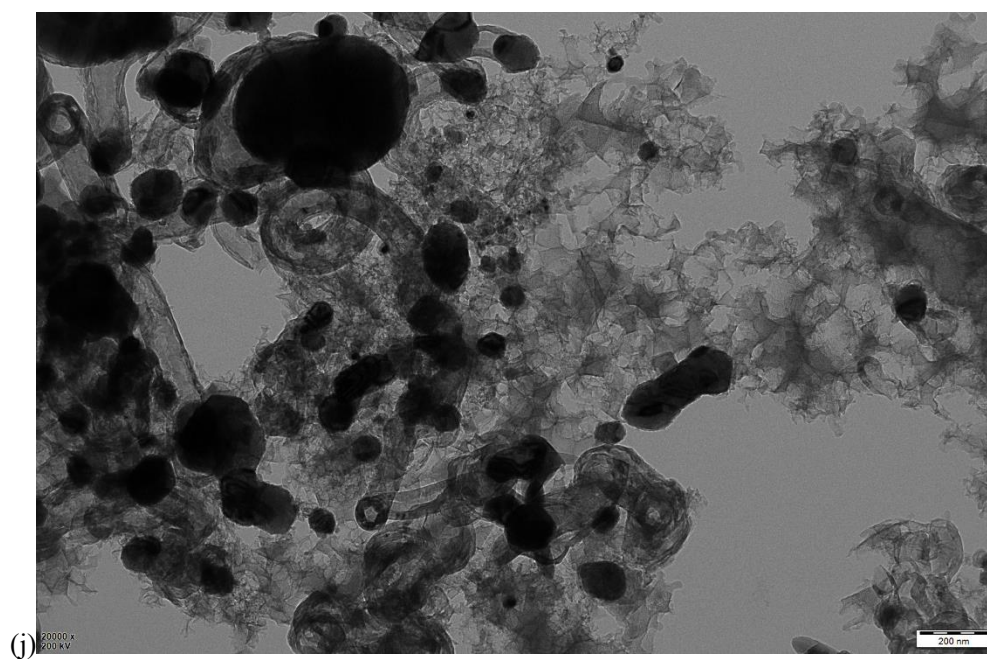
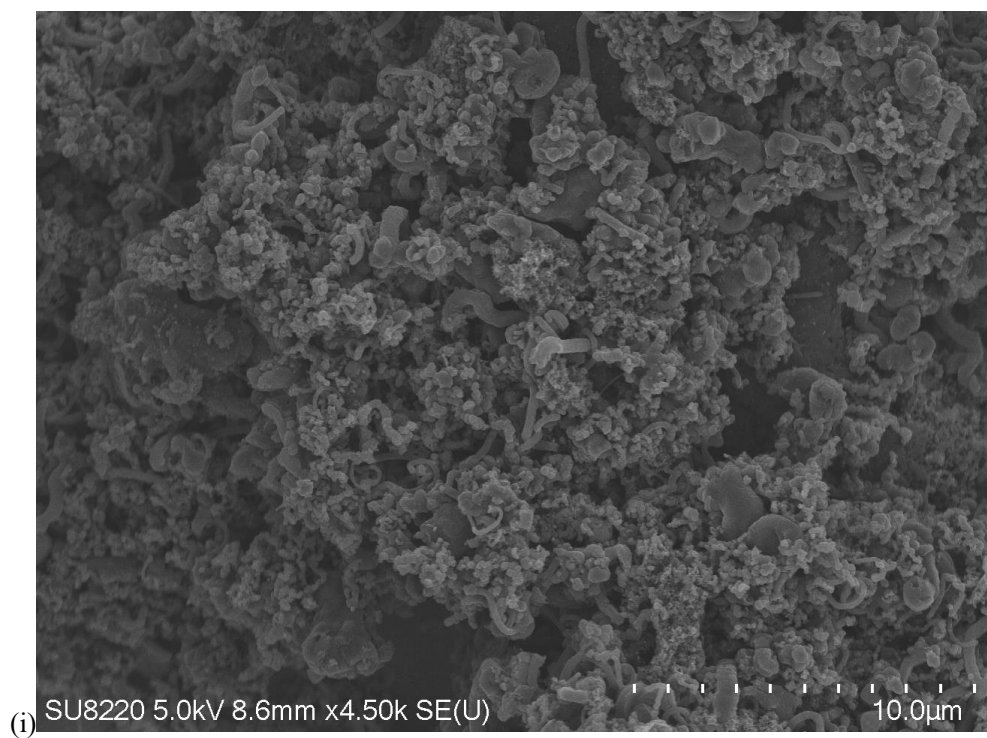
Figure S2. XRD patterns of Co-NC catalysts synthesized with various calcination temperatures and Co loadings.











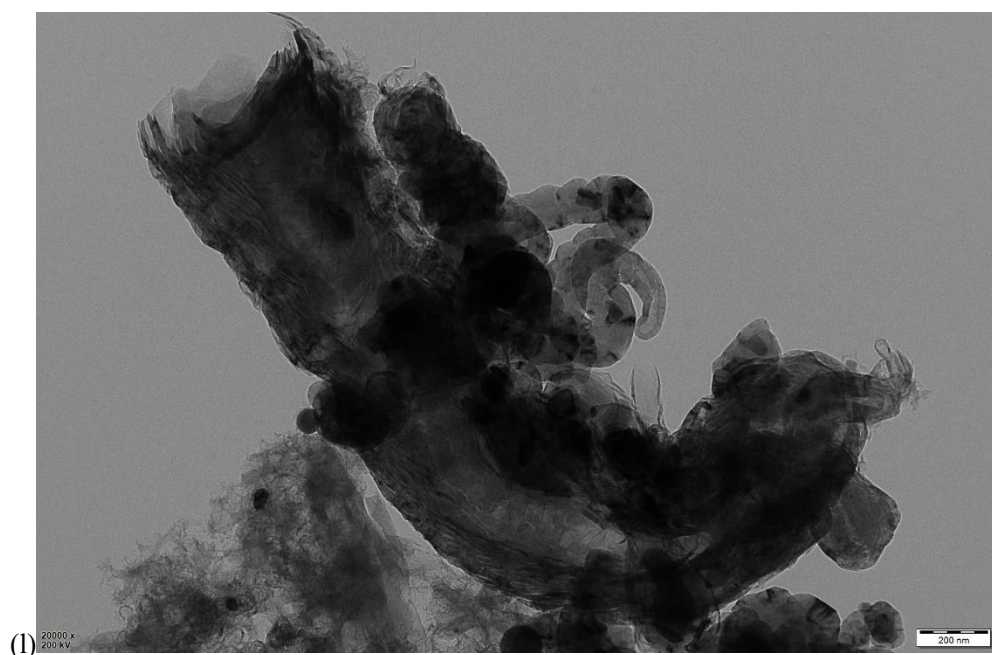
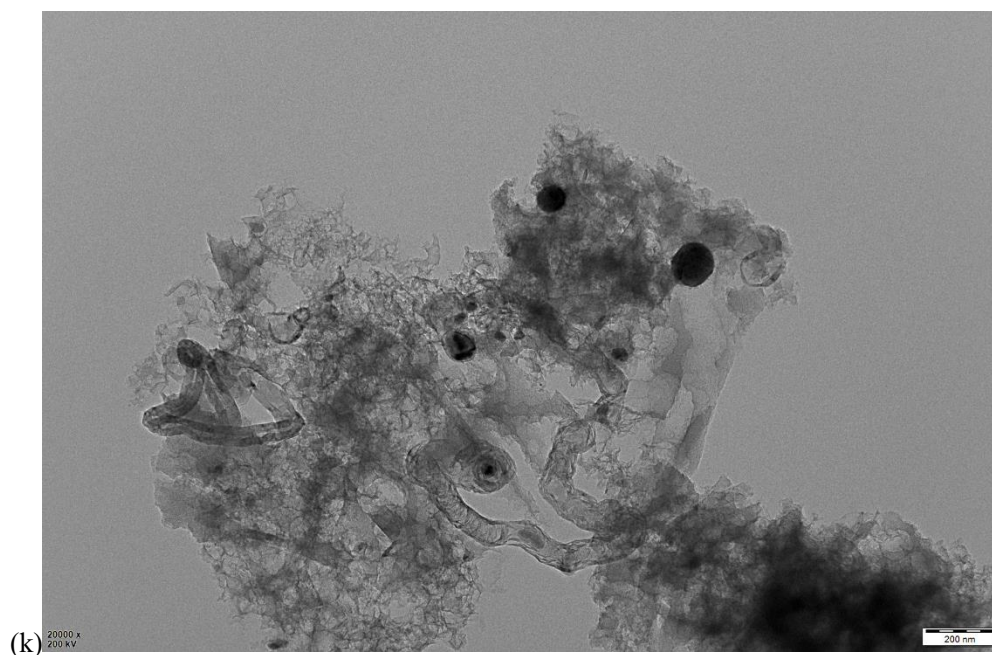


Figure S3. SEM images of (a) 7.5Co-NC-300, (b) 7.5Co-NC-500, (c) 7.5Co-NC-700, (d) 7.5Co-NC-800, (e) 7.5Co-NC-900, (f) 7.5Co-NC-1000, (g) 0Co-NC-900, (h) 5Co-NC-900, (i) 10Co-NC-900; and TEM images of (j) 7.5Co-NC-800, (k) 7.5Co-NC-900, (l) 7.5Co-NC-1000.

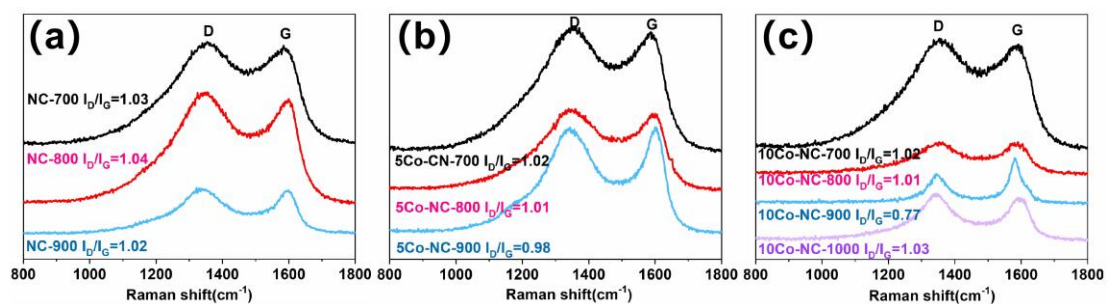


Figure S4. Raman spectra of Co-NC catalysts synthesized with various calcination temperatures and Co loadings.

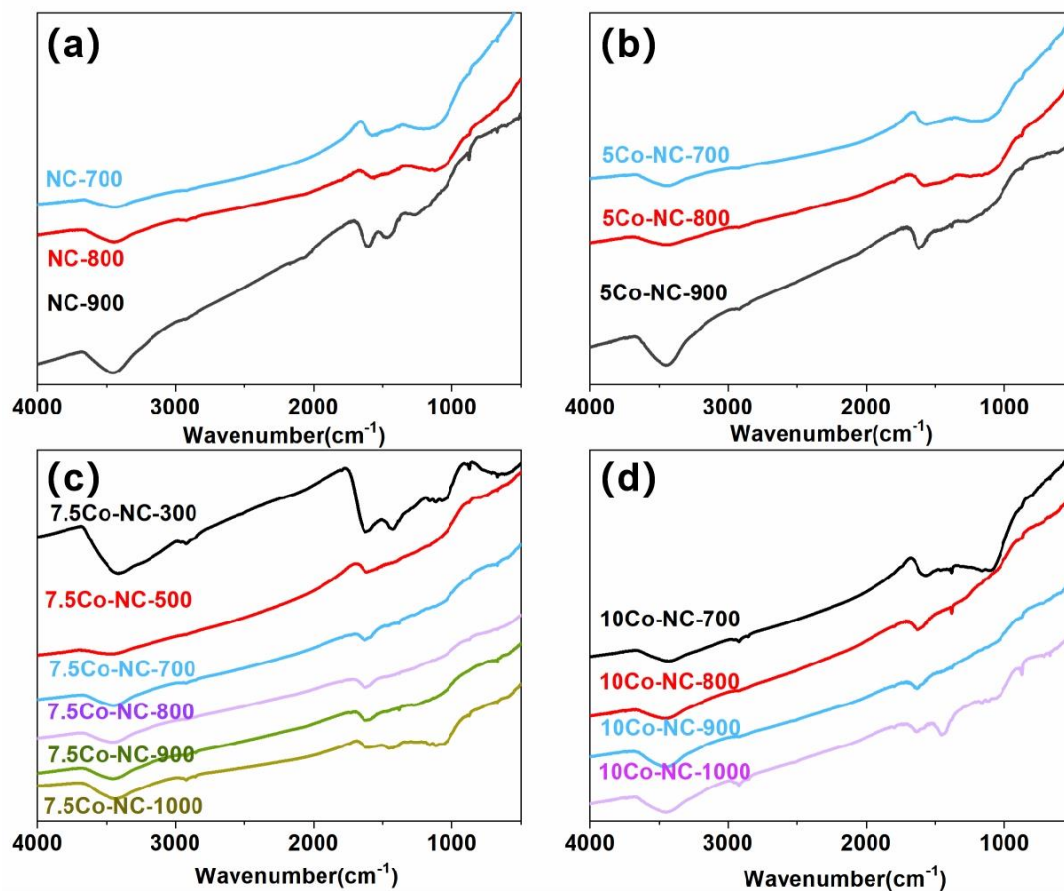


Figure S5. Infrared spectra of Co-NC catalysts synthesized with various calcination temperatures and Co loadings.

Table S1. The content of nitrogen in various catalysts.

No.	Sample	The content of nitrogen
1	5Co-NC-900	2.8%
2	7.5Co-NC-300	8.3%
3	7.5Co-NC-500	5.2%
4	7.5Co-NC-700	3.2%
5	7.5Co-NC-800	2.8%
6	7.5Co-NC-900	2.7%
7	7.5Co-NC-1000	2.1%
8	10Co-NC-900	2.4%