Supporting Information

Magnetic N-doped Co-carbon Composites Derived from Metal Organic Frameworks as Highly Efficient Catalysts for p-Nitrophenol Reduction Reaction

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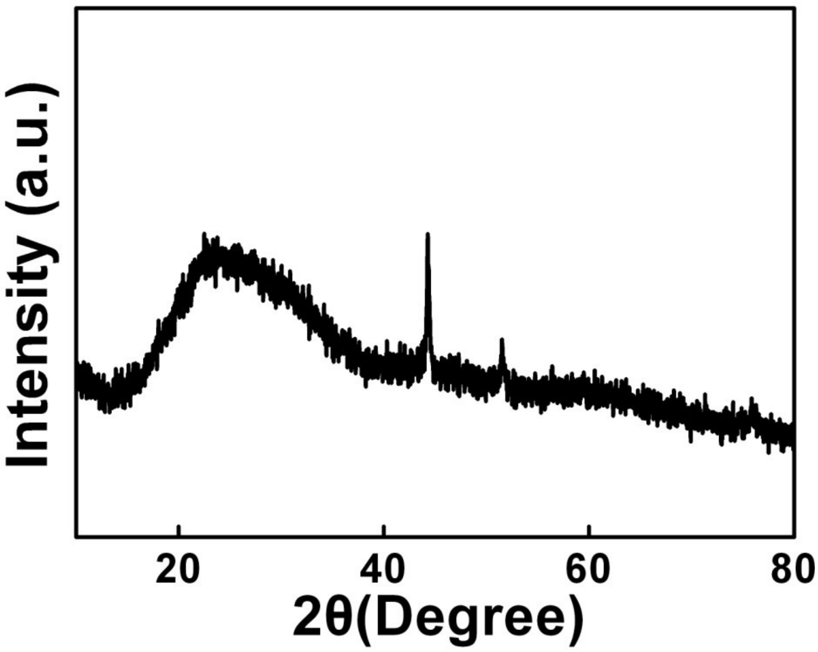


Fig.S1 XRD patterns of Co@C-600.

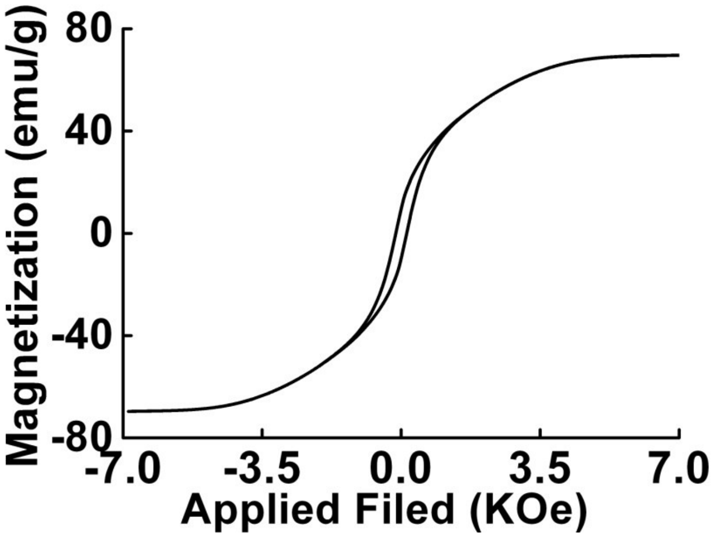


Fig.S2 Room-temperature (300 K) magnetic hysteresis loops of Co@C-600.

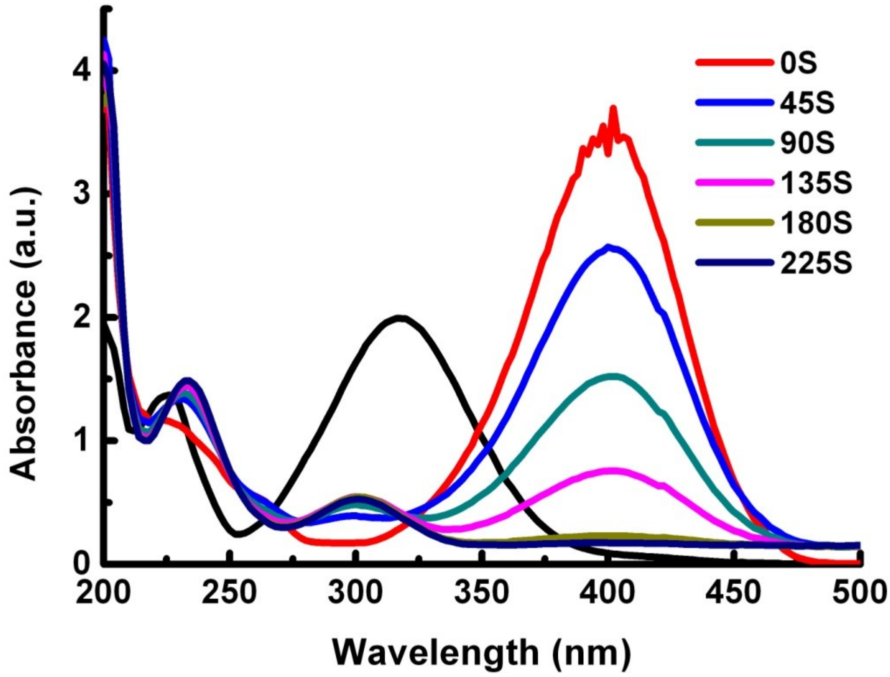
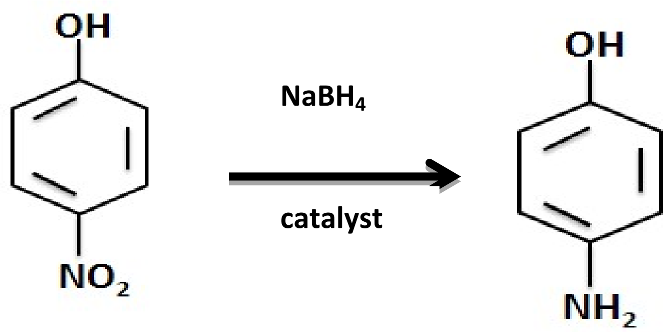


Fig.S3 The changes of UV–vis spectrum during the reduction of p-nitrophenol by 0.2 M $NaBH_4$ in the presence of Co@C-600.

a



b

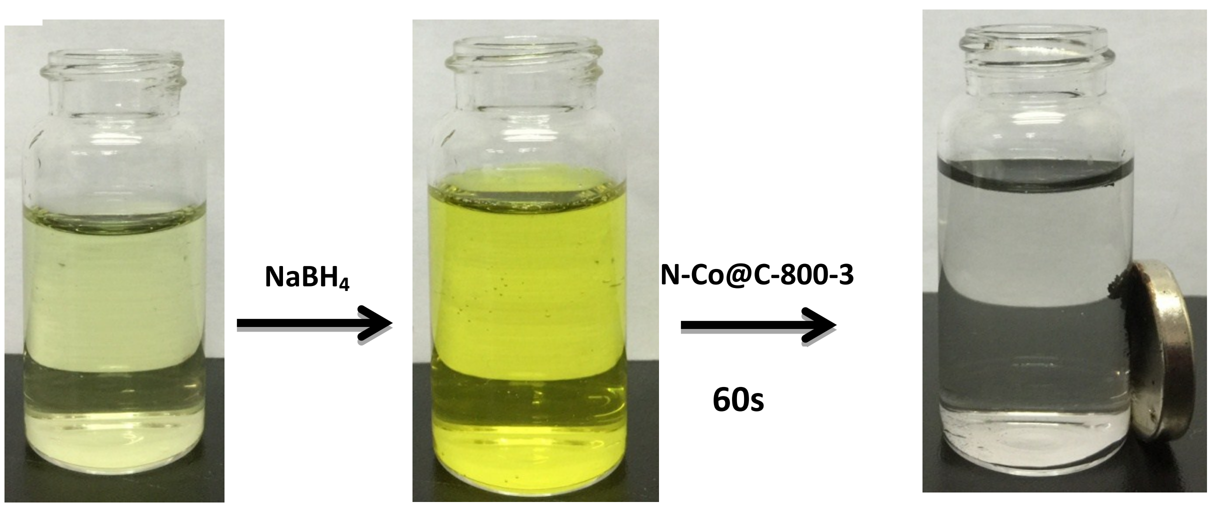


Fig.S4 (a) Reduction reaction for the conversion of 4-NP to 4-AP catalyzed by Co@NC in the presence of $NaBH_4$. (b) Pictures of the reduction of 4-NP by $NaBH_4$ before and after being catalyzed by N-Co@C-800-3.

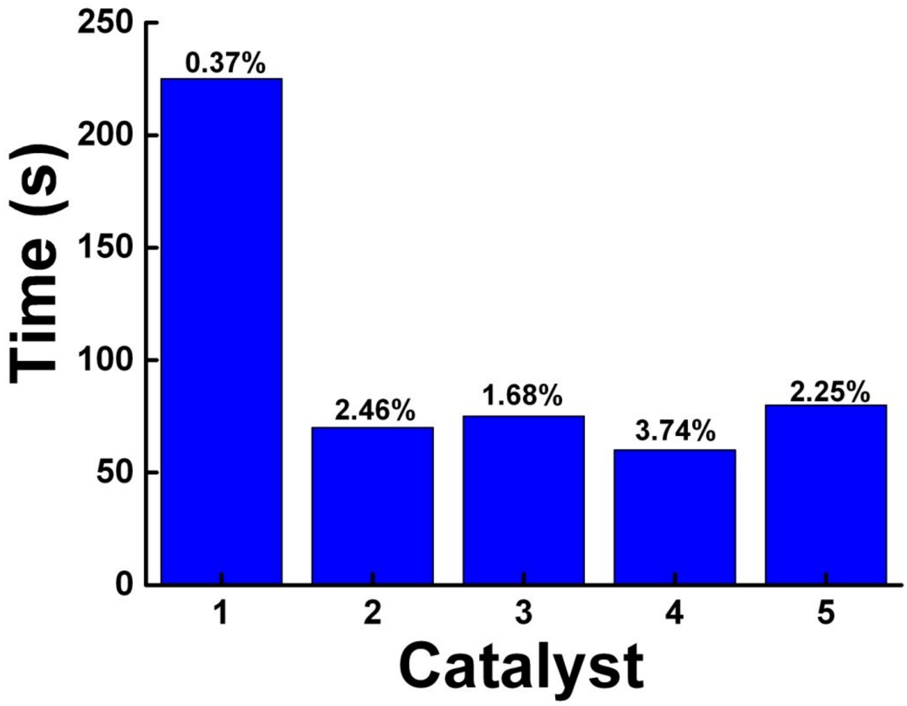


Fig.S5 The reaction time of the catalyst with different nitrogen content (1: Co@C-600, 2: N-Co@C-800-1, 3: N-Co@C-800-2, 4: N-Co@C-800-3, 5: N-Co@C-800-4).

Table.S1 XPS characterization results of different catalyst.

name	C1s	N1s	Co2p3
N-Co@C-800-1 (At. %)	95.78	2.46	1.76
N-Co@C-800-2 (At. %)	97.4	1.68	0.92
N-Co@C-800-3 (At. %)	93.41	3.74	2.86

N-Co@C-800-4 (At. %)	96.04	2.25	1.71
Co@C-600 (At. %)	99.32	0.37	0.31
N-Co-C-800-3(At. %)	99.11	0.72	0.17

Table.S2 The textural properties of different catalysts.

Catalyst	Surface area ($m^2 g^{-1}$)	Pore volume ($cm^3 g^{-1}$)	Pore size (nm)
N-Co@C-600-3	303.4420	0.2491	3.28
N-Co@C-700-3	289.9949	0.3605	4.97
N-Co@C-800-3	225.8197	0.3795	6.72

Table.S3 Comparison of pseudo-first-order rate constants for 4-NP reduction by N-Co@C-800-3 and other reported nanocatalysts.

Catalyst	Rate constant (S^{-1})	Reference
Co-NCC	4.7 E-02	22
Co-Ni-rGO	1.9 E-02	16
Ag@AMH	0.45E-02	6
Au/CuO	1.70E-03	28
N-Co@C-800-3	5.91E-02	This study