SUPPLEMENTARY MATERIAL

Highly Active Layered Double Hydroxide-Derived Cobalt Nano-Catalysts for *p*-Nitrophenol Reduction

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Author Contributions:

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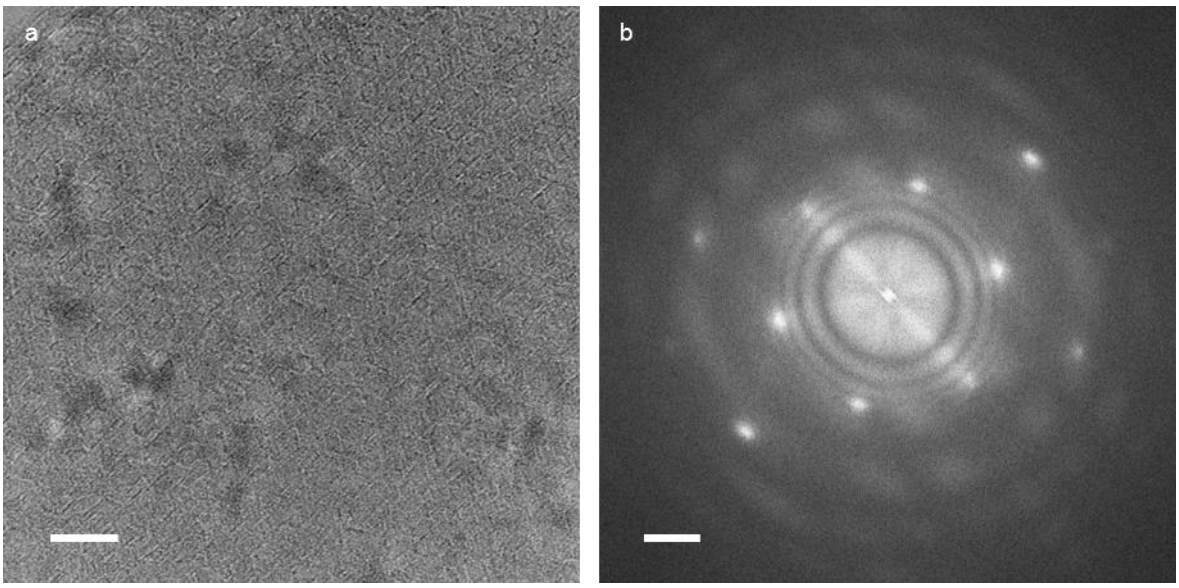

Figure S1. TEM and FFT of layered double hydroxide. Scale bars: *a*, 10 nm; *b*, 2 nm^{-1}.

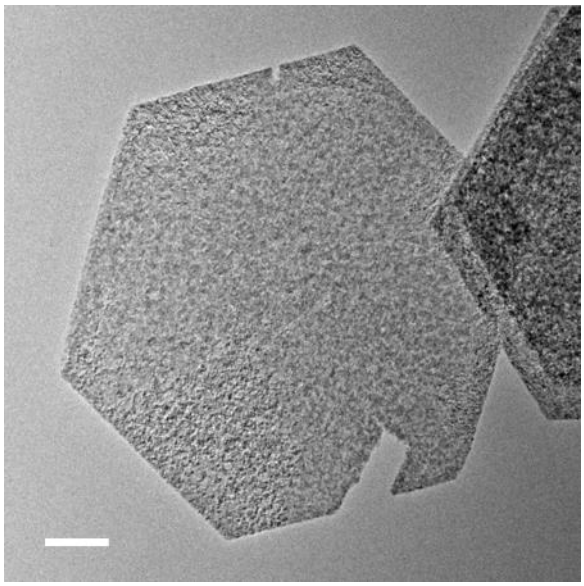

Figure S2. TEM of a LDO-Co disk. Scale bar: 500 nm.

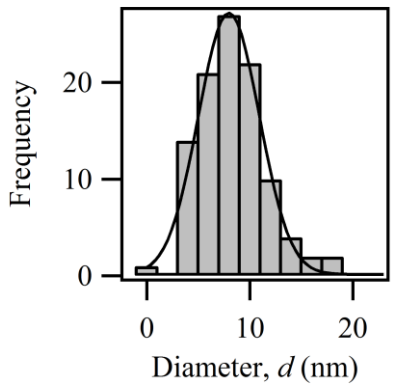

Figure S3. A representative normal distribution of LDO-Co diameter. Sample: cobalt molar percentage, 15%.

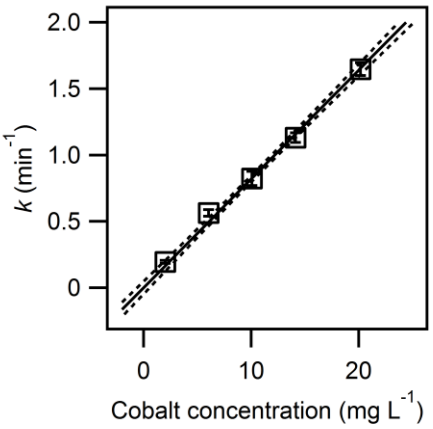

Figure S4. Dependence of pseudo first order rate constant (k) on cobalt loading. Experimental conditions: cobalt molar percentage, 28%; nanoparticle diameter, 11.1(±4.9) nm; *p*-nitrophenol, 0.2 mM. The linear correlation confirms that the reduction of p-nitrophenol catalyzed by LDO-Co is not limited by mass transfer.

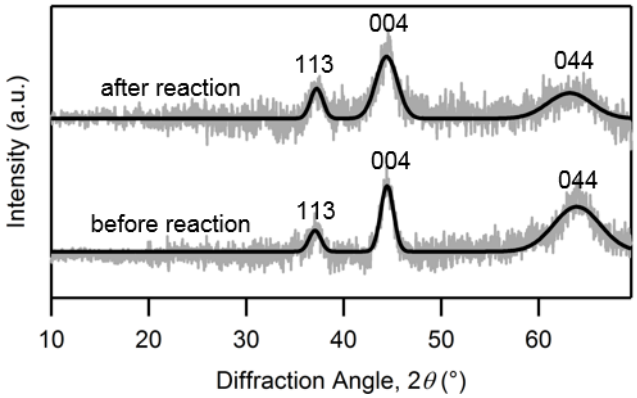

Figure S5. XRD of LDO-Co before and after reaction.

Table S1. Characteristics of the Catalysts Used for the Comparisons in Figure 6

Catalyst	NP size (nm)	C_{PNP} (mM)	k (min^{-1} g^{-1} L)	TOF* (min^{-1})	Reference
Co/LDO	6.8-11.1	0.20	86.3	0.72	This study
$Co(OH)_2$	nanosheets	0.125	1.77	0.009	[1]
Co/RGO	8±1	0.096	0.82	0.0033	[8]
Co-HCP/RGO	90	0.096	1.10	0.0045	[9]
Co/hydrogel	100	0.72	0.96	0.029	[10]
$Co@SiO_2$	20	0.6	30.8	0.78	[11]
Co_3O_4	-	5	0.25	0.053	[12]
Pd/dendrimer	2.4±0.5	0.1	6875	52.8	[2]
Pd/R5 peptide	2.6±0.5	0.057	189	1.45	[4]
Pd/Al_2O_3	6±1	0.1	622	4.77	[5]
Pd/CNP	3	0.2	608	9.33	[6]

* Turnover frequency was evaluated at 50% conversion.