Electronic Supplementary Information

Enhancing the Electrode Performance of Co_3O_4 through Co_3O_4@a-TiO_2 Core−Shell Microcubes with Controllable Pore Size

Yanting Chu,[a] Jinkui Feng,[a] Yitai Qian,[a,b] Shenglin Xiong,[a,c*]

[a]Key Laboratory of the Colloid and Interface Chemistry, Ministry of Education, and School of Chemistry and Chemical Engineering, Shandong University, Jinan, 250100, PR China

E-mail: chexsl@sdu.edu.cn (S. L. X.)

[b]Hefei National Laboratory for Physical Science at Microscale and Department of Chemistry, University of Science and Technology of China, Hefei, Anhui, 230026 (P. R. China)

[c]CAS Key Laboratory of Materials for Energy Conversion, University of Science and Technology of China, Hefei, Anhui, 230026, P. R. China

Supplementary Figures

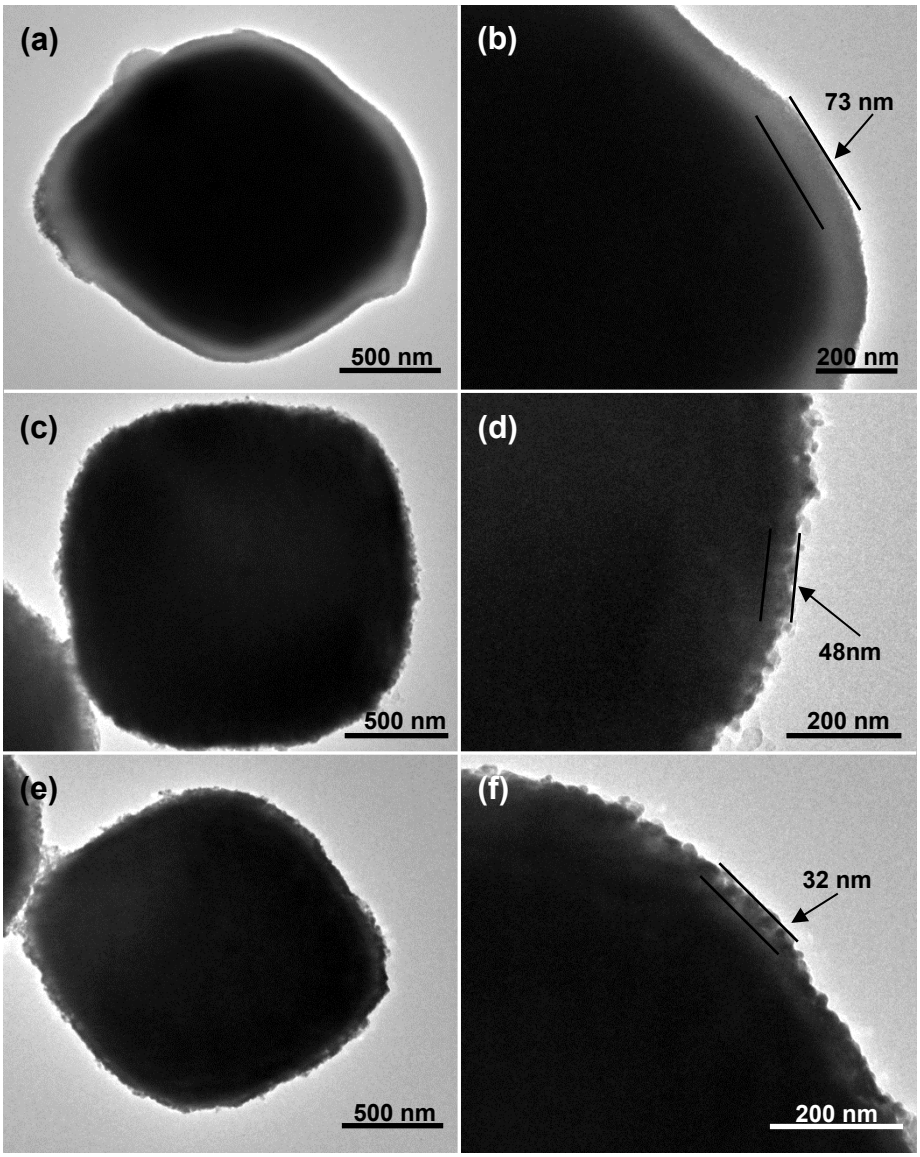

Figure S1. High-magnification TEM images of the S-40, S-80, S-120 with a-TiO_2 layers of different thickness(S-40:a, b; S-80: c, d; S-120:e, f).

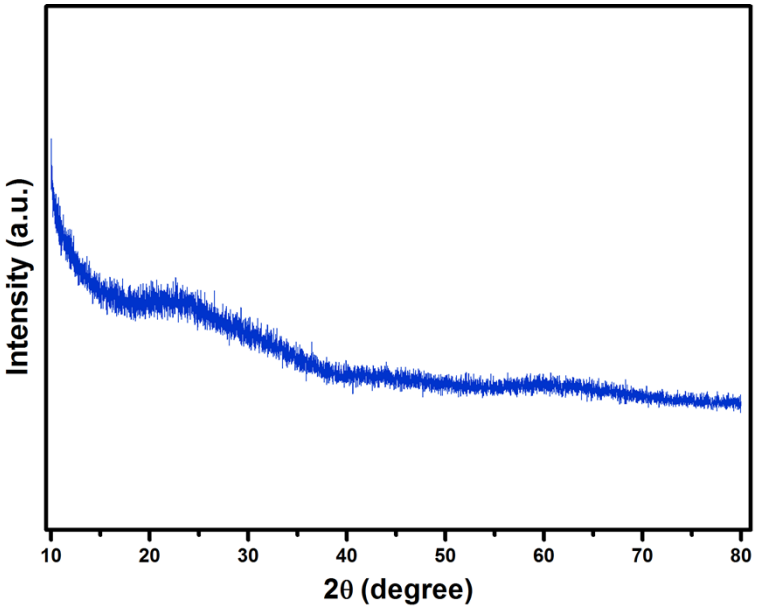

Figure S2. XRD pattern of the a-TiO_2.

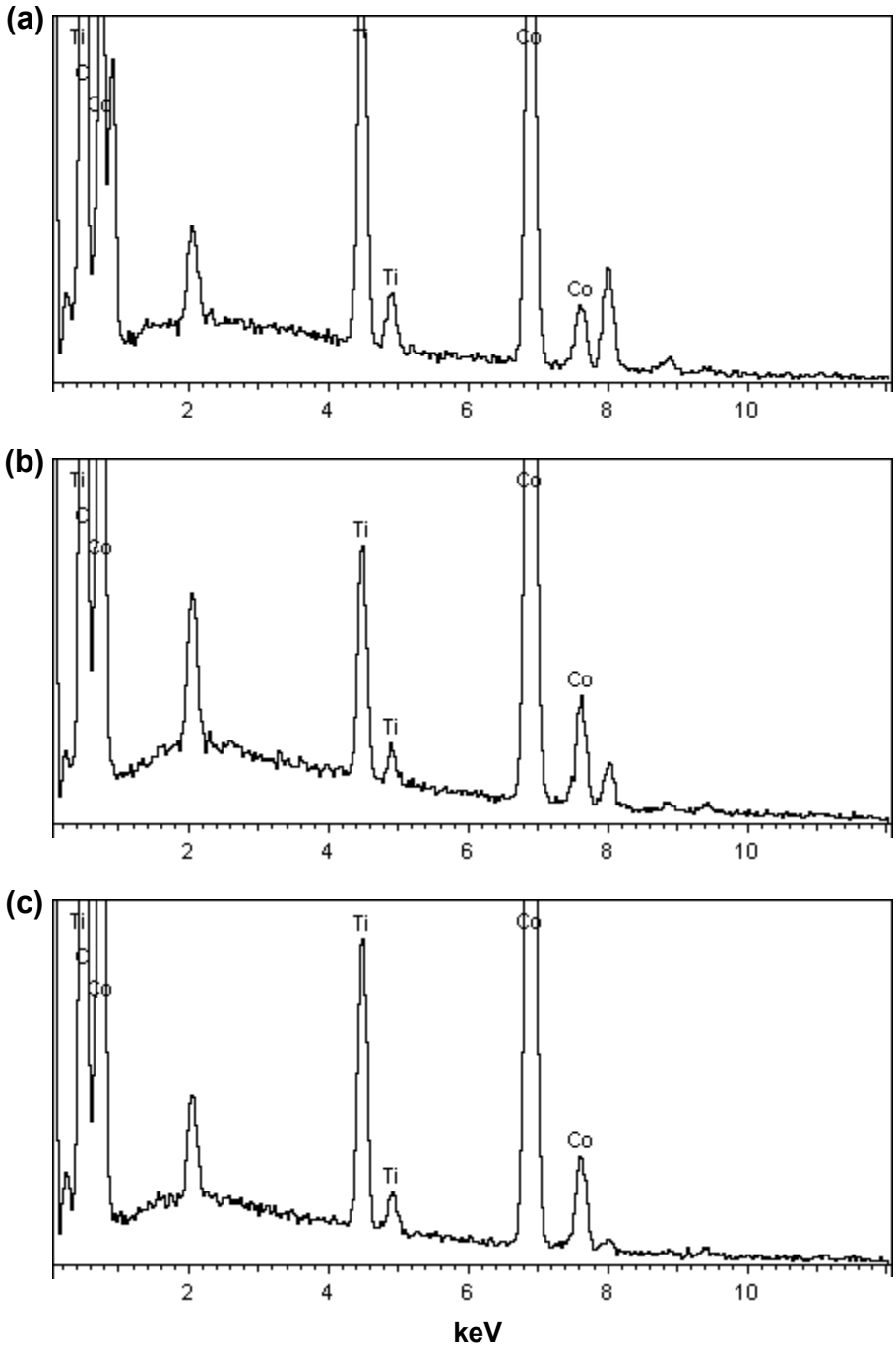

Figure S3. EDS of the sample S-40 (a), S-80 (b), S-120 (c).

Table S1. Quantitative analysis of Co and Ti contents by ICP-AES.

Sample	mass ratio Co%	mass ratio Ti%	Co_3O_4:TiO_2 mass ratio %
S-0			1:0
S-40	7.62	3.07	2.03:1
S-80	11.99	1.92	5.17:1
S-120	9.32	0.65	11.65:1

Table S2. Physical properties from N_2 sorption studies of the four samples.

Samples	Specific surface area ($m^2\ g^{-1}$)	BJH Desorption Average pore size (nm)	Pore volume ($cm^3\ g^{-1}$)
S-0	73.55	9.49	0.25
S-40	105.67	5.20	0.14
S-80	85.40	6.22	0.17
S-120	56.38	10.87	0.21

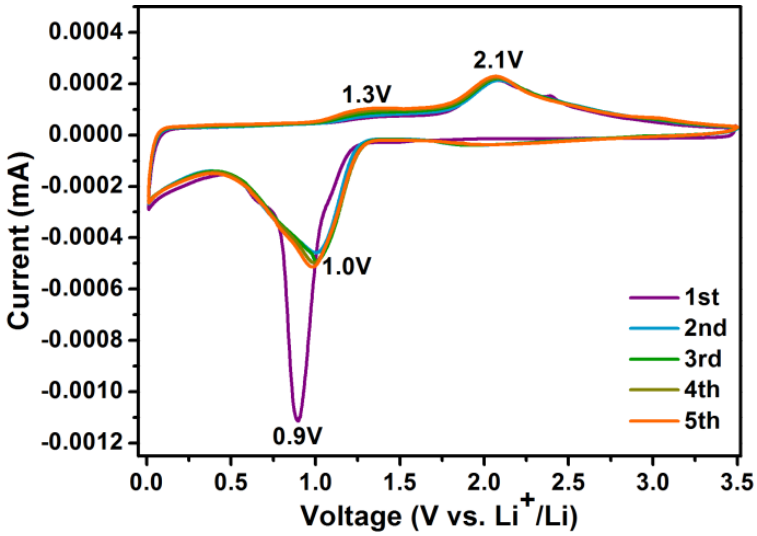

Figure S4. Cyclic voltammetry (CV) curves for the S-0 at a scan rate of 0.1 mV s^{-1} in the voltage windows of 0.01-3.5 V.

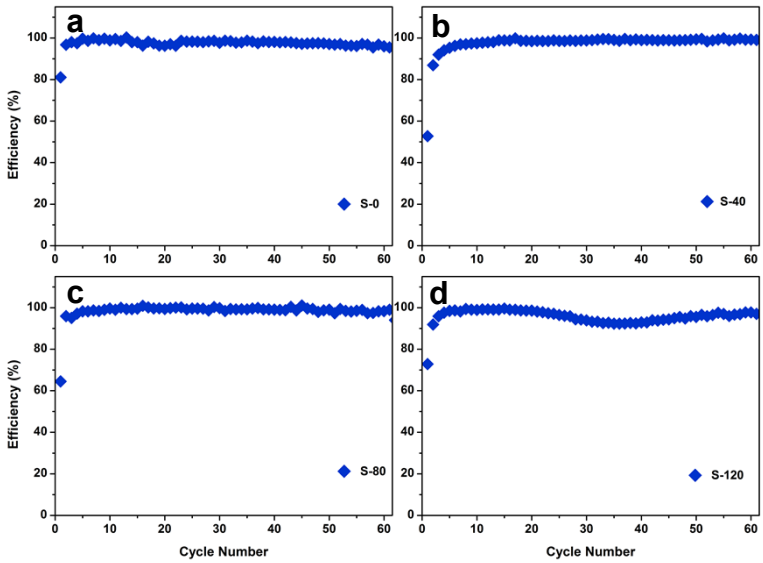

Figure S5. The Coulombic efficiency for the samples (S-0: a; S-40: b; S-80: c; S-120: d).

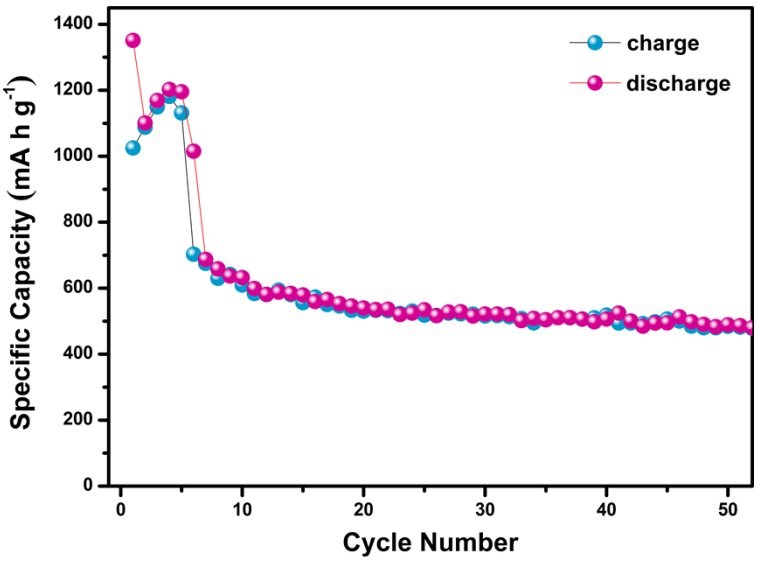

Figure S6. Cycle performance of S-80 at a current density of 2 A g^{-1}.

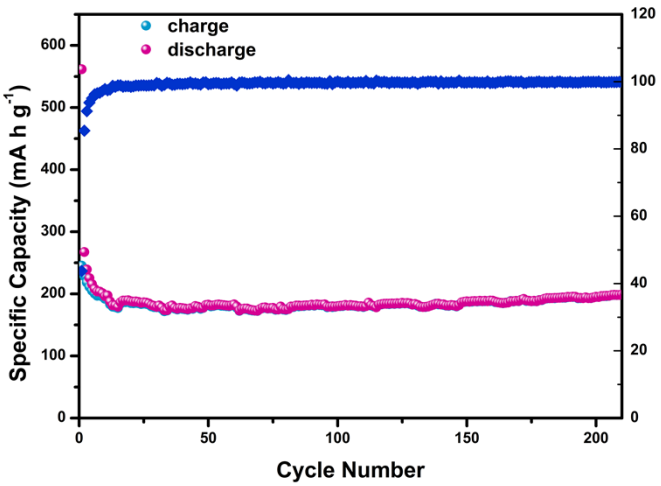

Figure S7. Charge-discharge curves of a-TiO_2 at a current density of 0.5 A g^{-1}.