

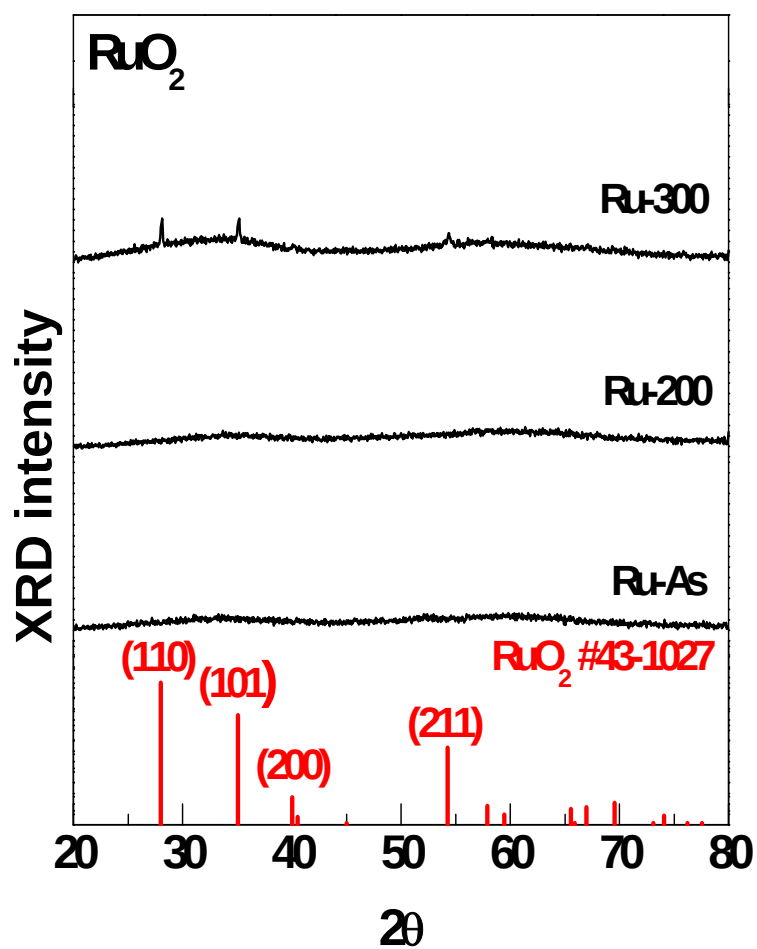


Figure S1 XRD patterns of the freshly prepared and annealed RuO₂·xH₂O synthesized by means of the oxidative precipitation method. The standard diffraction peaks of rutile RuO₂ (JCPDS #43-1027) is also provided and the plotting scale is referred to F-300 for a clear comparison.

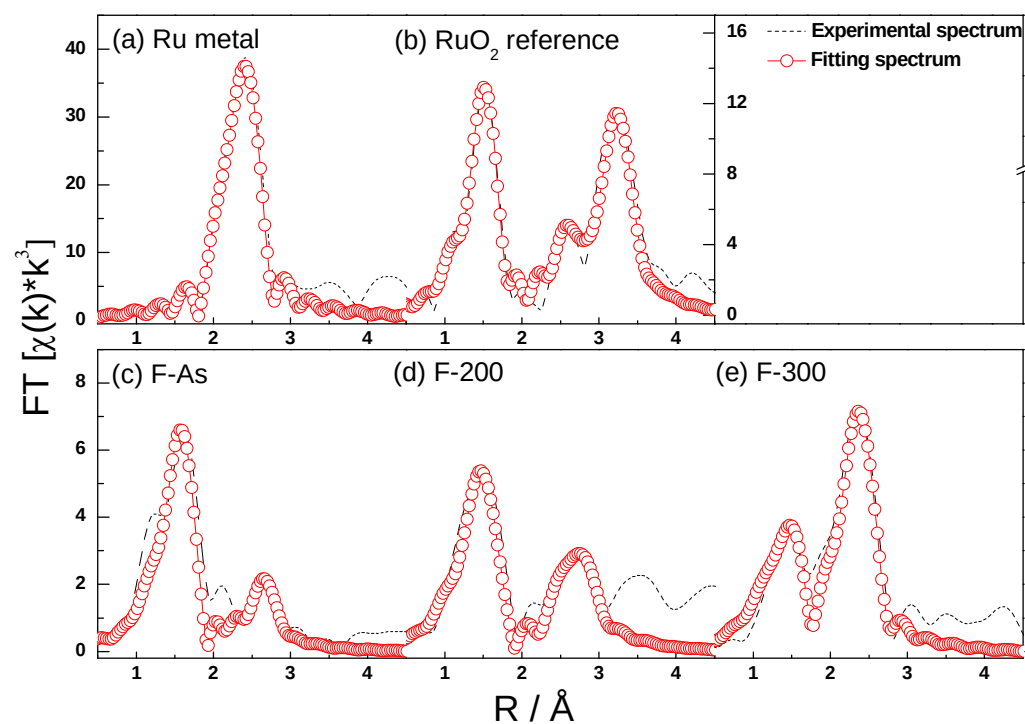


Figure S2 Fitting results of Ru K-edge EXAFS spectra for (a) metallic Ru, (b) standard RuO₂, (c) F-As, (d) F-200, and (e) F-300.

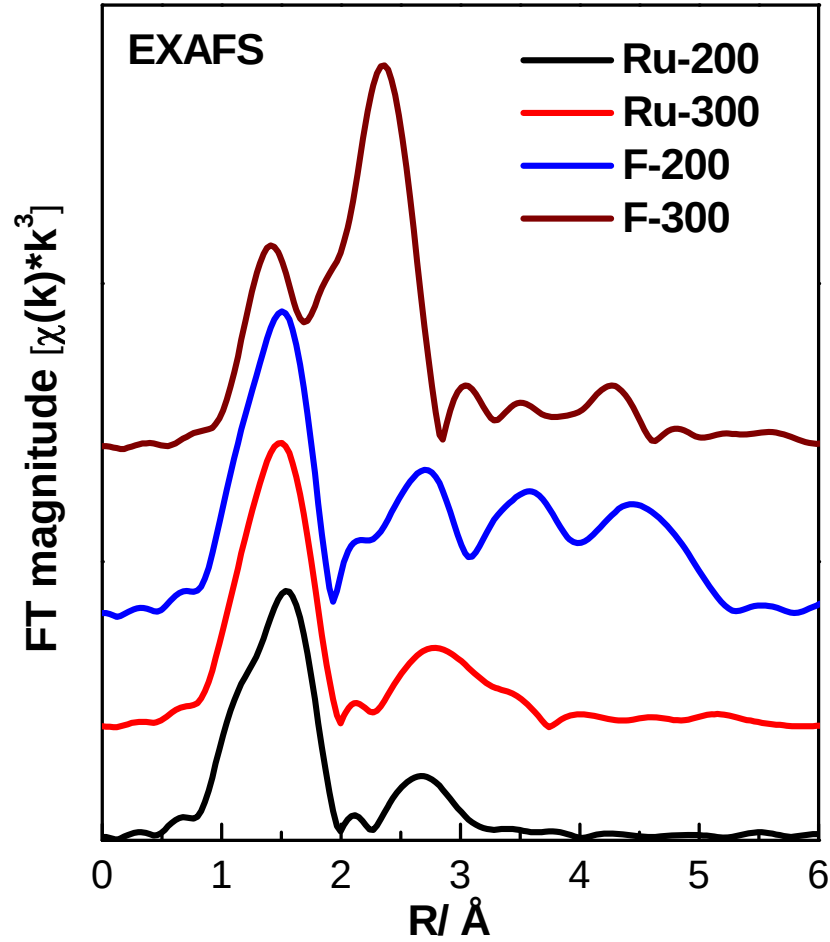


Figure S3 A comparison of the EXAFS spectra of annealed RuO₂ trapped with and without F127.

Table S1 Fitting results of the Ru K-edge for metallic Ru, standard RuO₂, F-As, F-200, and F-300 samples.

Samples	Shell	N ^a	R _j ^b [Å]	σ ² (x 10 ⁻³) ^c [Å ²]	ΔE ₀ ^d [eV]	R factor ^e
Ru metal	Ru-Ru	12	2.67	4.8	4.6	0.001
RuO ₂	Ru-O1	2.0	1.94	3.0	1.2	0.002
	Ru-O2	4.0	1.98			
	Ru-Ru	2.0	2.89	5.0		
	Ru-Ru	8.0	3.11	4.7		
F127-As	Ru-O1	1.3	2.02	5.8	3.1	0.02
	Ru-O2	3.4	2.06			
	Ru-Ru	0.6	2.94	3.3		
F127-200	Ru-O1	1.2	2.01	7.2	-0.8	0.02
	Ru-O2	3.2	1.97			
	Ru-Ru	0.9	3.06	1.6		
F127-300	Ru-O1	1.1	1.92	9.6	-7.6	0.003
	Ru-O2	2.6	1.96			
	Ru-Ru	3.2	2.68	6.2	-3.1	

All of the structural parameters are obtained by finely EXAFS spectra fitting with S₀² = 0.89 and the deviation is below 10 %.

^a N: coordination number

^bR_j: coordination distance

^cσ²: mean squared disorder for the bond distance

^dΔE₀: inner potential correction

^e R factor: residual error

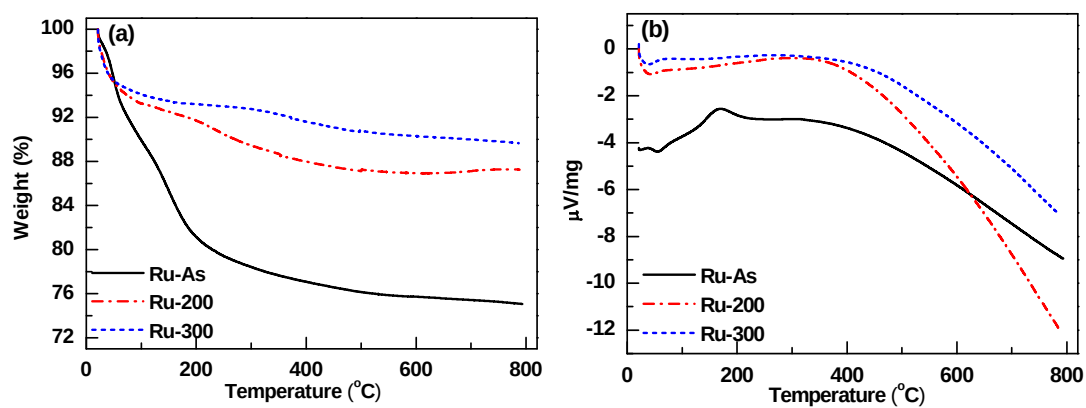


Figure S4 TG/DTA analyses of pristine RuO₂ and annealed RuO₂ without F127 trapping.

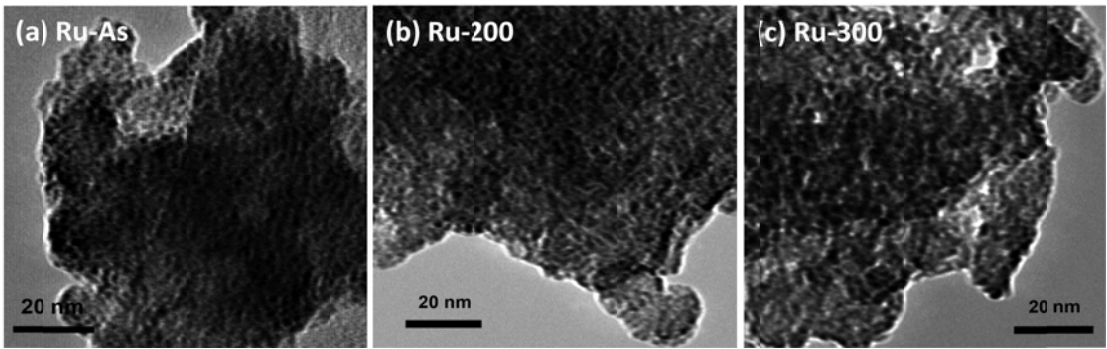


Figure S5 HR-TEM morphologies of (a) Ru-As, (b) Ru-200, and (c) Ru-300.

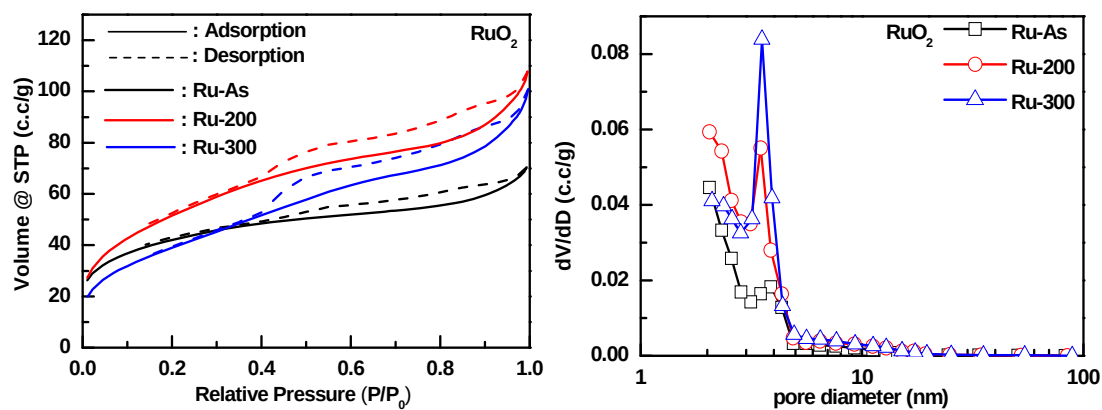


Figure S6 (a) N₂ adsorption-desorption isotherms and (b) the corresponding pore size distribution of as-prepared and annealed RuO₂.

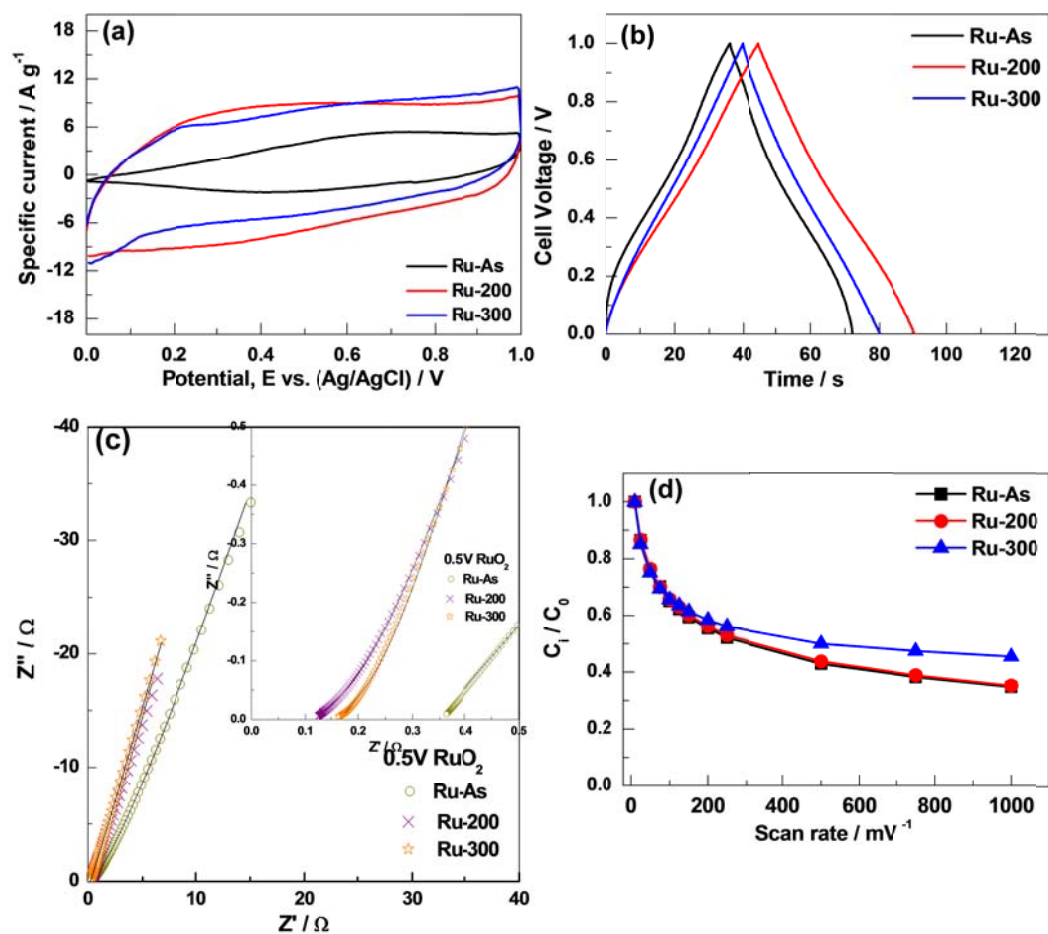


Figure S7 (a) CV, (b) charge/discharge, (c) Nyquist plots measured in 0.5 M H₂SO₄ and (d) capacitance rate-retention (from 10 to 1000 mV s⁻¹) of Ru-As, Ru-200, and Ru-300.

Table S2 The columbic efficiency of various RuO₂ samples prepared in this work.

The charge-discharge test was performed at a constant current density of 10 A g⁻¹.

	F-As	F-200	F-300	Ru-As	Ru-200	Ru-300
10 A/g	87.48	100.96	100.44	100.80	100.80	100.29

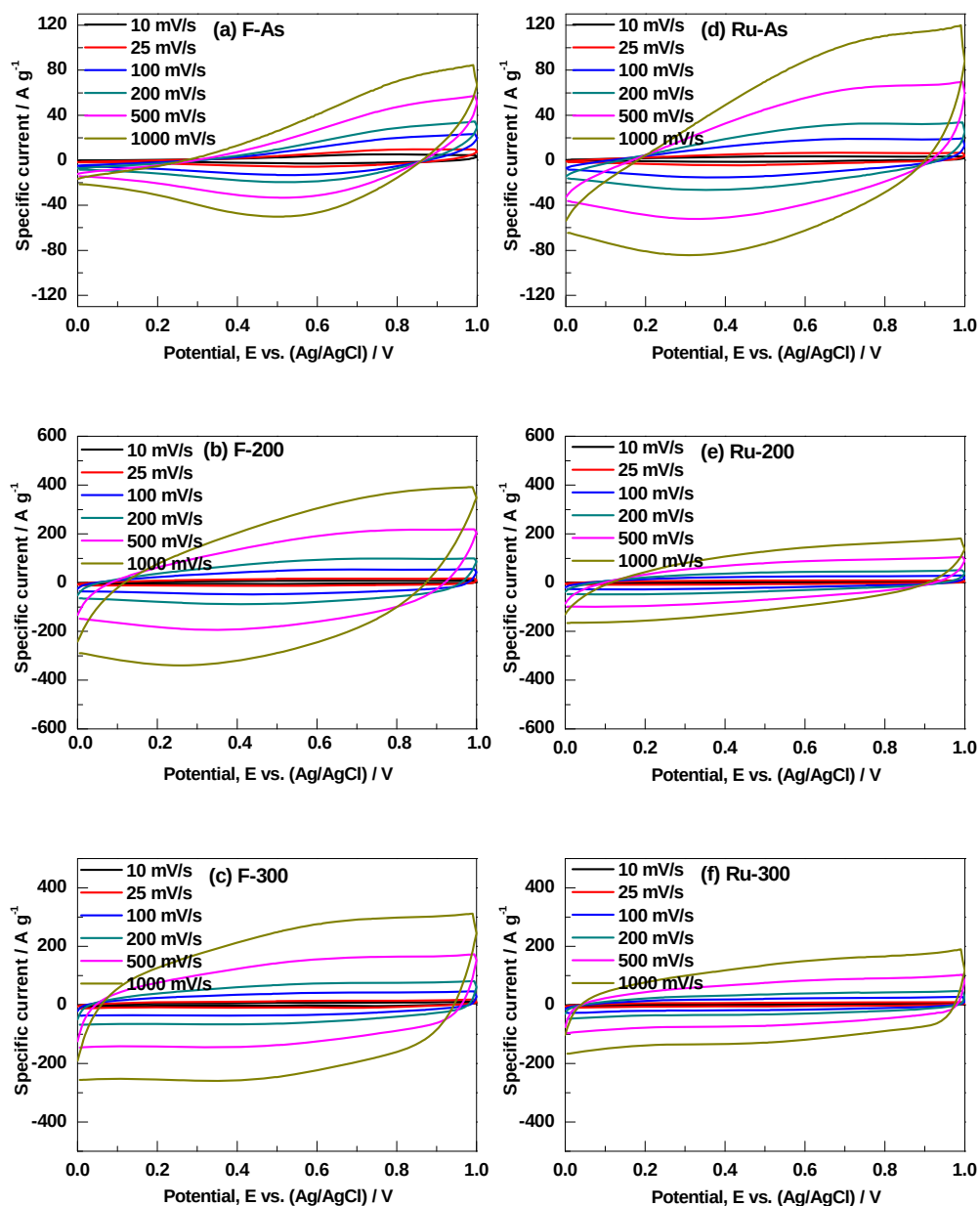


Figure S8 Cyclic voltammograms measured at the scan rate varied from 10 to 1000 mV s⁻¹ in 0.5 M H₂SO₄ for (a) F-As, (b) F-200, (c) F-300, (d) Ru-As, (e) Ru-200, and (f) Ru-300.