



Supporting Information of

The Facile Synthesis of Hollow CuS Microspheres Assembled from Nanosheets for Li-Ion Storage and Photocatalytic Applications

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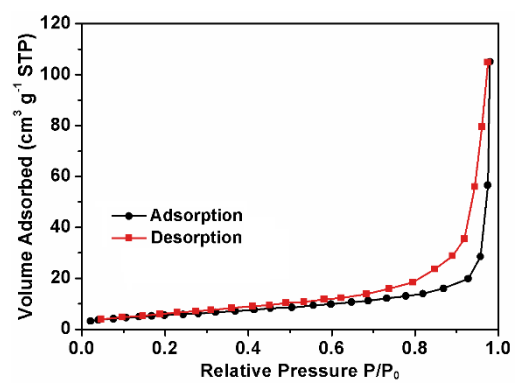


Figure S1. N₂ adsorption-desorption isotherm of S-1.

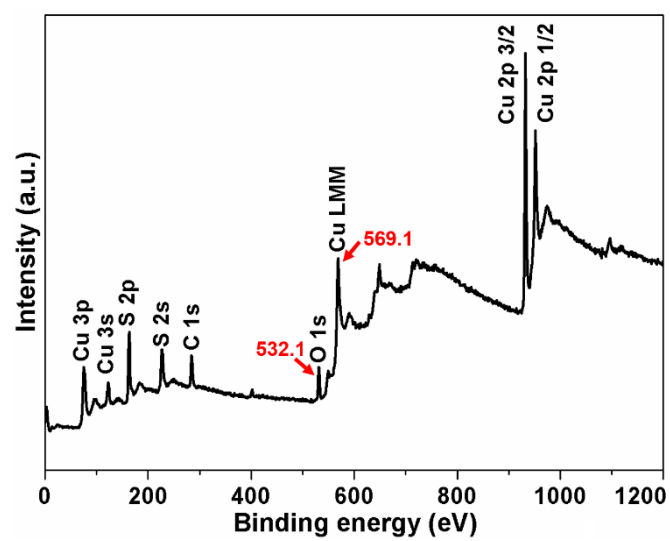


Figure S2. Wide-scan XPS survey of S-1.

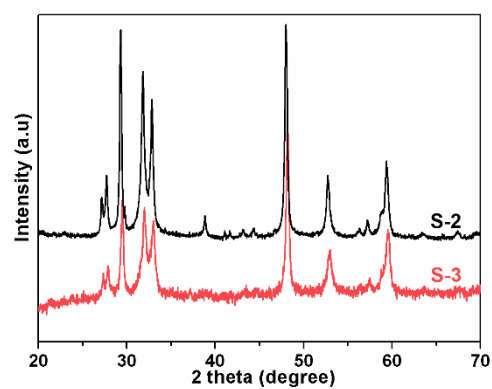


Figure S3. XRD patterns of S-2 and S-3.

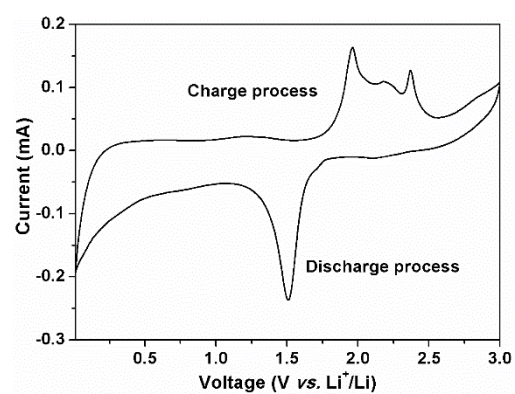


Figure S4. CV curve of S-1 at a scan rate of 0.1 mV s^{-1} .

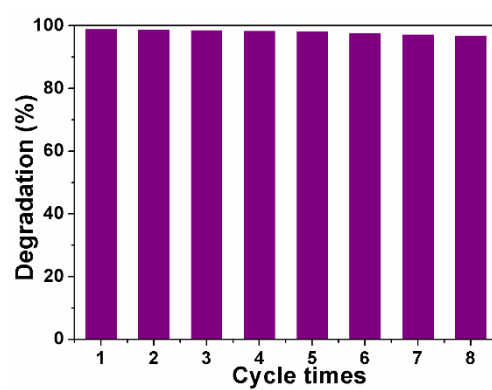


Figure S5. The photocatalytic cycling stability of S-1 for the degradation of RhB.

Table S1. The detailed experimental conditions and corresponding morphologies of samples.

Samples	Deionized water (mL)	Glycerol (mL)	Temperature (°C)	Time (h)	Morphology
S-1	12.5	2.5	150	9	Hollow microsphere
S-2	15.0	0.0	150	9	Hollow microsphere and irregular aggregates
S-3	10.0	5.0	150	9	Messy aggregates

Table S2. The comparison of the electrochemical performance of S-1 and other previously reported copper sulfides-based anodes for LIBs.

Samples	Discharge capacity	Cyclability	Ref.
S-1	610.1 mAh g ⁻¹ (0.5 C)	196.3 mAh g ⁻¹ /500th (1 C)	In this work
CuS microspheres	258 mAh g ⁻¹ (0.1 C)	~62 mAh g ⁻¹ /50th (0.1 C)	[1]
Tubular dandelion-like CuS superstructures	500 mAh g ⁻¹ (0.56 A g ⁻¹)	390 mAh g ⁻¹ /10th (0.56 A g ⁻¹)	[2]
Sphere-like CuS hierarchical structures	590 mAh g ⁻¹ (0.1 A g ⁻¹)	100 mAh g ⁻¹ /10th (0.1 A g ⁻¹)	[3]
Cu _x S/rGO nanocomposites	325 mAh g ⁻¹ (0.2 A g ⁻¹)	250 mAh g ⁻¹ /200th (0.2 A g ⁻¹)	[4]
Cu ₂ S nanoparticle	320 mAh g ⁻¹ (0.5 C)	125 mAh g ⁻¹ /50th (1 C)	[5]
Cu ₂ S/C composite	~285 mAh g ⁻¹ (0.5 C)	270 mAh g ⁻¹ /300th (0.2 C)	[6]

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Table S3. The comparison of the photocatalytic performance of S-1 and other previously reported metal sulfides for the degradation of organic dyes.

Samples	Dye	Dye concentration (mg/L)	Dye volume (mL)	Time (min)	Photodegradation (%)	Ref.
S-1 (0.1 g)	RhB	10	100	21	99	In this work
CuS spherical (0.1 g)	RhB	2.5	200	30	90	[1]
CdS decorated CuS microflower (0.3 g)	MO	10	50	30	91	[2]
CuS microflowers (0.05 g)	MB	5	30	25	98	[3]
CuS nanoflowers (0.1 g)	MB	20	100	90	39	[4]
SnS ₂ -RGO composite (0.05 g)	RhB	10	50	120	100	[5]
CdS/ZnS nanocomposites (0.2 g)	RhB	10	200	35	96.1	[6]
Flower-shaped CuS/Bi ₂ WO ₆ nanosphere (0.1 g)	RhB	20	150	50	90	[7]

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