

## Supporting Information

### Unlocking Superior Lithium Storage via Synergistic Confinement: Metal-Organic Frameworks Derived Carbon- Confined Metal Sulfides

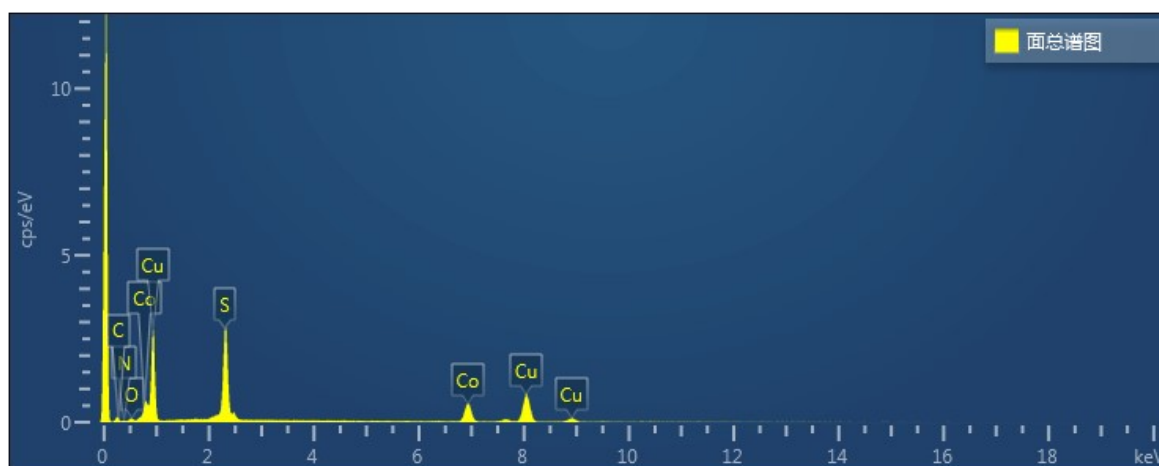


Figure S1 EDS spectrum of Cu<sub>9</sub>S<sub>5</sub>/NC@Co<sub>3</sub>S<sub>4</sub>/NC.

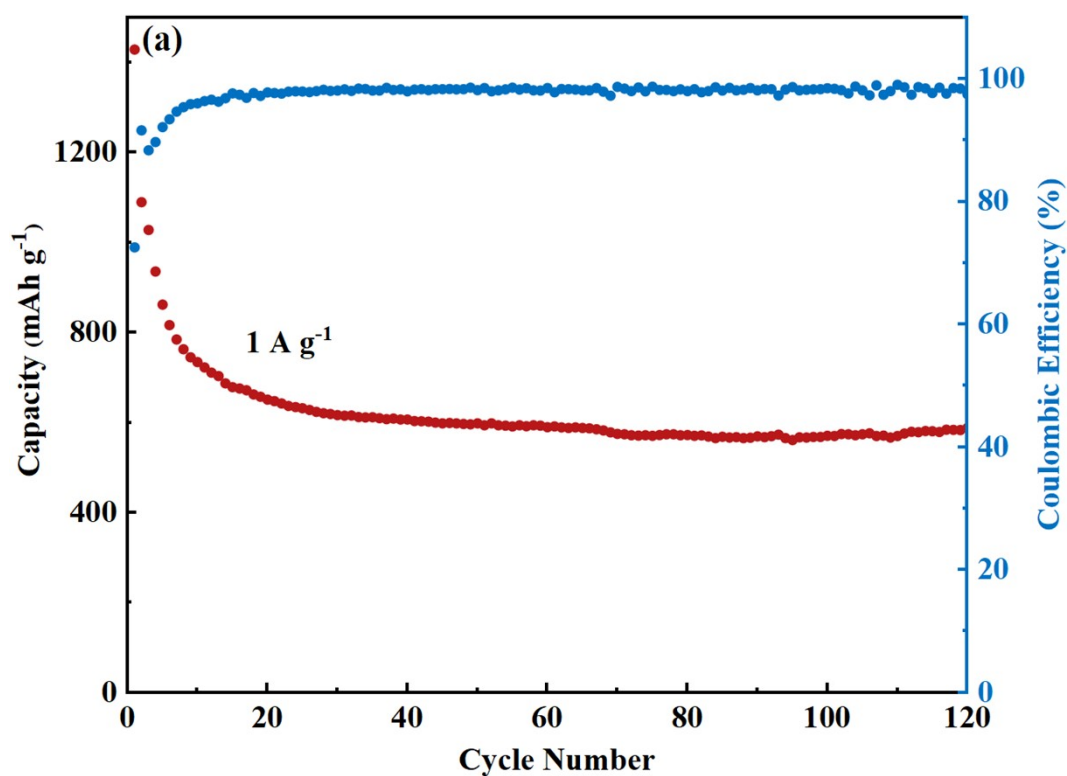
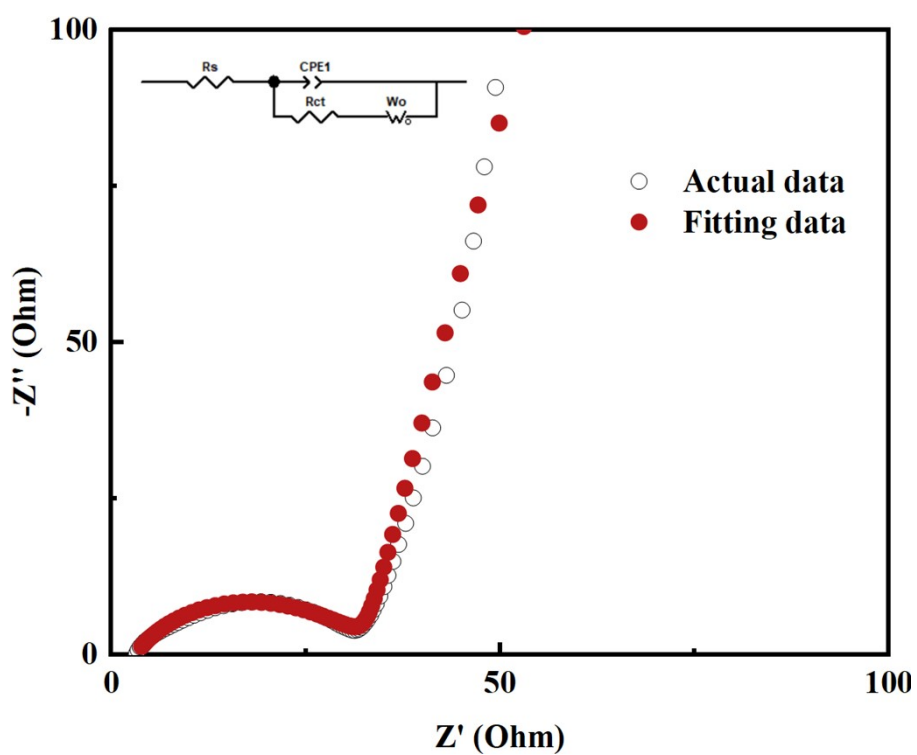


Figure S2 Cycling performance of Cu<sub>9</sub>S<sub>5</sub>/NC@Co<sub>3</sub>S<sub>4</sub>/NC anodes at 1 A g<sup>-1</sup>.



**Figure S3** EIS of the  $\text{Cu}_9\text{S}_5/\text{NC}@\text{Co}_3\text{S}_4/\text{NC}$  anode before and after fitting.

**Table S1** Comparison of the capacity of this work with previously reported anodes.

Samples	Current density	Cycle number	Capacity ( $\text{mAh g}^{-1}$ )	Ref.
	( $\text{mA g}^{-1}$ )			
$\text{ZnS}/\text{Co}_3\text{S}_4$	1000	200	750	[1]
$\text{Cu}_9\text{S}_5/\text{CNFs}$	100	100	709.2	[2]
$\text{CNTs}@\text{NC}@\text{Co}_3\text{S}_4$	5000	500	311	[3]
$\text{Ni}_3\text{S}_4/\text{Co}_3\text{S}_4@\text{NSC}$	100	100	825.4	[4]
$\text{Ni}_3\text{S}_2/\text{CNWs}$	200	200	906	[5]
$\text{PW}_{12}@\text{Co}_3\text{S}_4@\text{GO}$	100	200	1036.4	[6]
$\text{Cu}_9\text{S}_5\text{-MoS}_x$	2000	3600	376	[7]

$\text{Fe}_3\text{S}_4/\text{Co}_9\text{S}_8$	100	100	945	[8]
$\text{CNT/PAN}@\text{Co}_9\text{S}_8@\text{C}$	2000	100	455	[9]
$\text{Cu}_4\text{SnS}_4/\text{CuS}@\text{C}$	100	60	881.9	[10]
$\text{Cu}_9\text{S}_5/\text{NC}@\text{Co}_3\text{S}_4/\text{NC}$	100/5000	120/700	1067.3/444.8	this work

**Table S2** Impedance fitting results

Sample	$R_s (\Omega)$	$R_{ct} (\Omega)$	$R_{total} (\Omega)$
$\text{Cu}_9\text{S}_5/\text{NC}@\text{Co}_3\text{S}_4/\text{NC}$	3.9	28.2	32.1

## Reference

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