Supporting Information

A one-pot method to prepare a multi-metal sulfide/carbon composite with a high lithium-ion storage capability

Wei-cai ZHANG[1,2], Chao-wei YANG[2], Shu-yu HU[2], Ya-wei FANG[2], Xiao-min LIN[2], Zhuo-hao XIE[2], Ming-tao ZHENG[1,2], Ying-liang LIU[1, 2,*], Ye-ru LIANG[1,2,*]

(1. Maoming Branch, Guangdong Laboratory of Lingnan Modern Agriculture, Maoming 525000, China

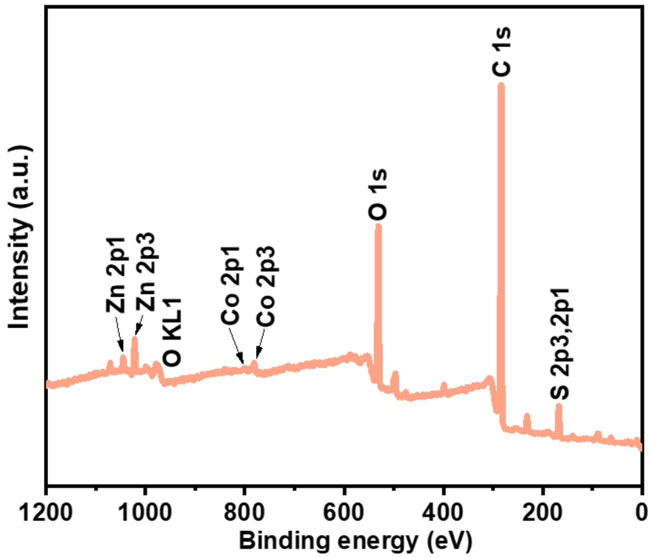
2. Key Laboratory for Biobased Materials and Energy of Ministry of Education, College of Materials and Energy, South China Agricultural University, Guangzhou 510642, China)

Corresponding author: LIU Ying-liang, Professor. E-mail: tliuyl@scau.edu.cn;

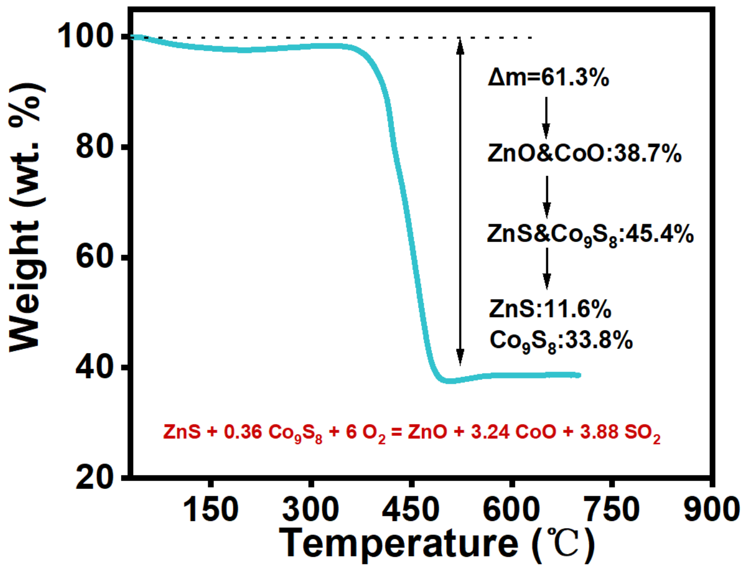
LIANG Ye-ru, Professor. E-mail: liangyr@scau.edu.cn

Author introduction: ZHANG Wei-cai, Doctor. E-mail: anbianyuke@163.com

Supplementary Figures



***F*igure S1.** XPS spectrum of IER-S-Zn/Co hybrid assembly.



***F*igure S2.** TGA curve of ZnS-Co_9S_8/C tested in air flow.

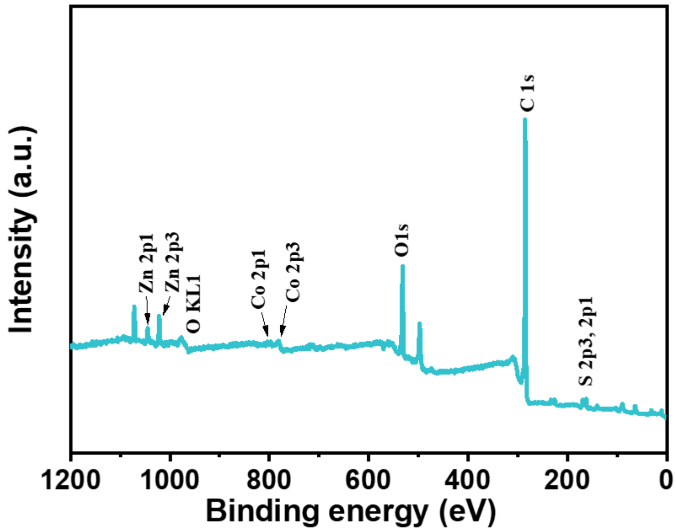


***Figure* S3.** XPS spectrum of ZnS-Co_9S_8/C.

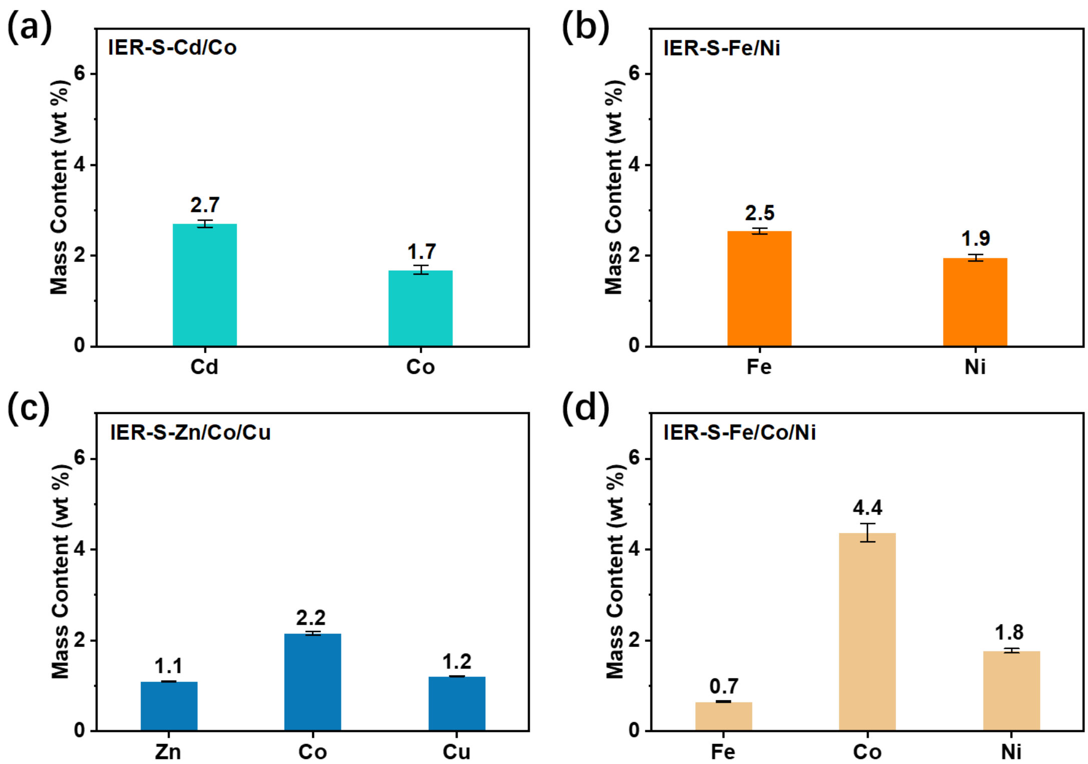


***Figure* S4.** Mass content of each metal element in different IER-S-M_1/M_2 or IER-S-$M_1/M_2/M_3$ hybrid assemblies.

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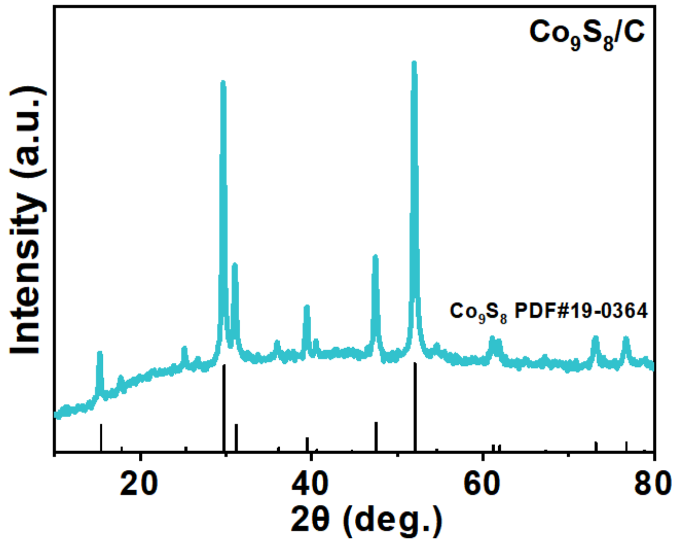

Figure S5. XRD pattern of Co_9S_8/C.

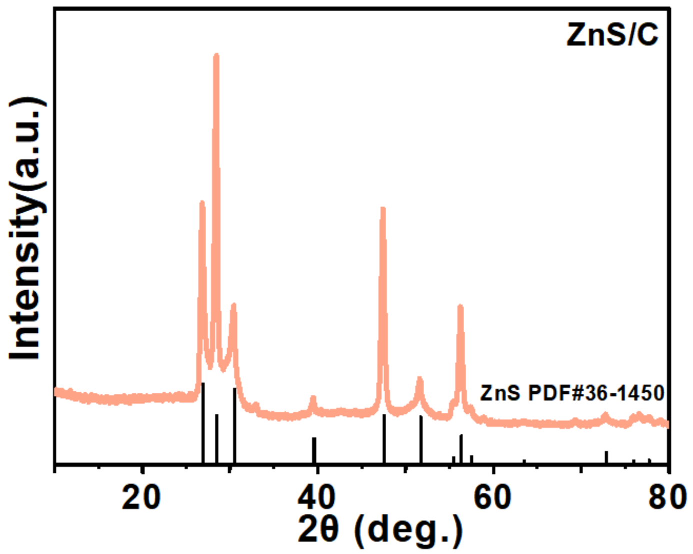

Figure S6. XRD pattern of ZnS/C.

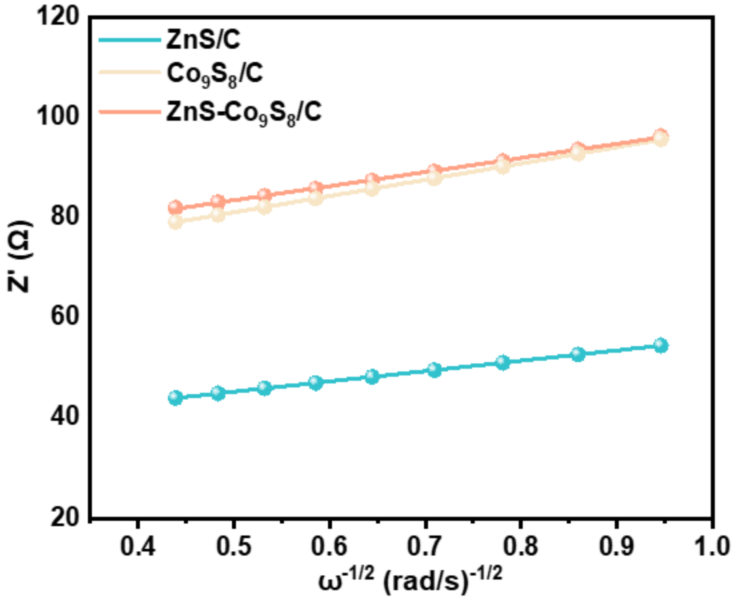

Figure S7. Plots of $\omega^{-1/2}$-Z′ of different anodes in lithium-ion batteries.

Supplementary Tables

Table S1. Comparisons of the cycling performance of metal sulfide-based anodes for lithium-ion batteries.

Anodes	Current density (A g^{-1})	Cycle number	Discharge capacity (mAh g^{-1})	Ref.
Co_9S_8/ZnS@NC	0.1	400	647.2	[1]
Ni_3S_2/Co_9S_8@S	0.3	200	528	[2]
Fe_3S_4/Co_9S_8	0.1	100	945	[3]
Sb_2S_3-Co_9S_8/NC	2	900	616	[4]
Co_3S_4/$CoMo_2S_4$@rGO	0.2	100	595.4	[5]
Zn-Co-S@N-C	1	300	667.7	[6]
SnS_2/ZnS rGO	10	4000	432.4	[7]
CoS_2-MnS@rGO	0.1	100	1327	[8]
MnS/Co_9S_8/C	1	40	422	[9]
ZnS-Co_9S_8/C	**0.1**	**600**	**651**	**This work**

Table S2. Kinetic parameters of different anodes.

Parameters	**ZnS/C**	**Co_9S_8/C**	**ZnS-Co_9S_8/C**
R_s (Ω)	4.5	6.0	2.8
R_{ct} (Ω)	67.7	63.3	34.0
σ (Ω $Hz^{1/2}$)	28.1	32.5	20.6
D_{Li} (10^{-20} cm^2 s^{-1})	12.8	9.6	23.9

References

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