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SUPPORTING INFORMATION

Cyanide-metal framework derived $CoMoO_4/Co_3O_4$ hollow porous octahedrons as advanced anode for high performance lithium ion batteries

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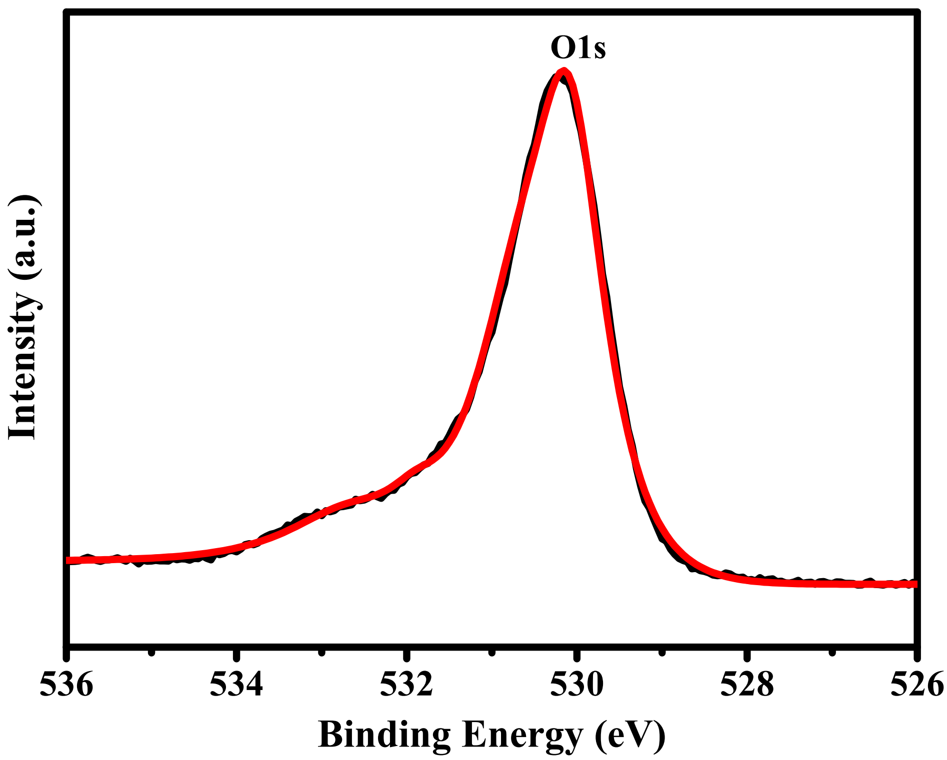

Fig. S1 O 1s XPS spectrum

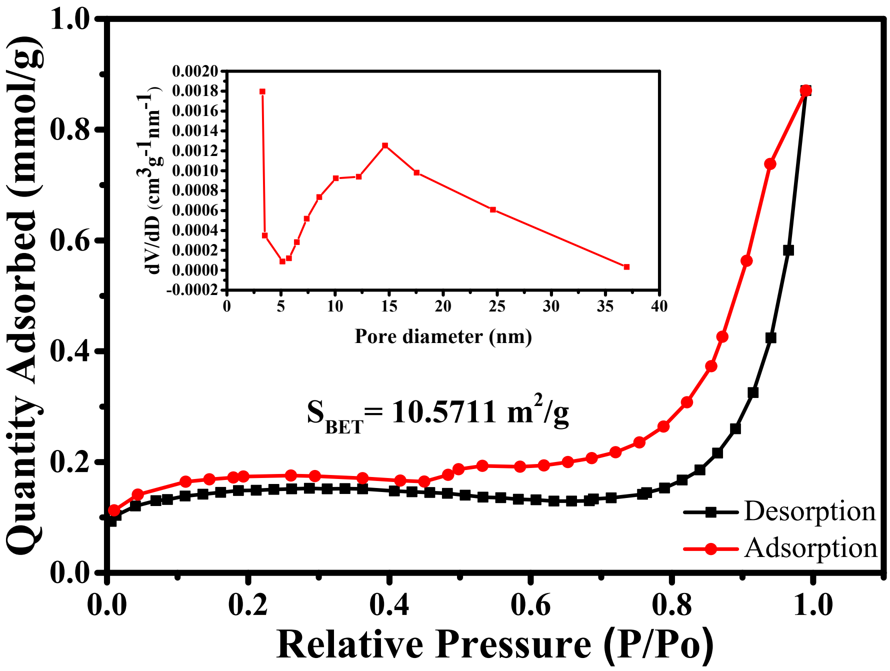

Fig. S2 N_2 adsorption/desorption isotherms (77 K) of $Co_2[Mo(CN)_8]\cdot xH_2O$. The inset shows the corresponding pore size distribution.

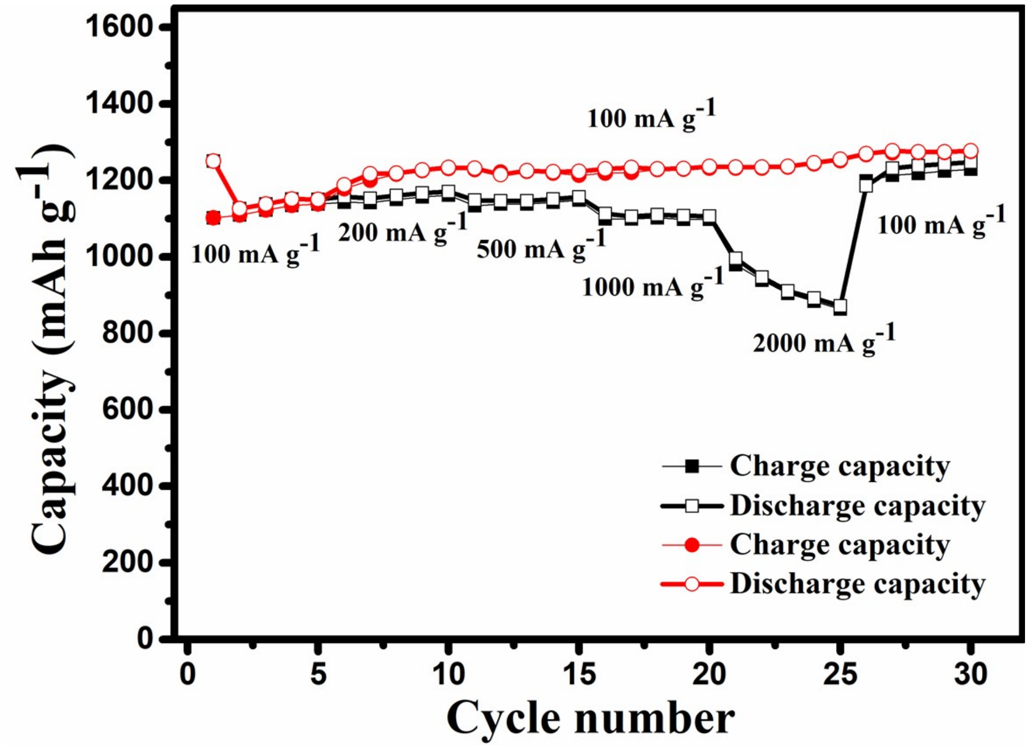

Fig. S3 Rate capability of $CoMoO_4/Co_3O_4$ hollow porous octahedrons as anode materials for LIBs at different current densities and cycling performance over 30 cycles at 100 mA g^{-1}.

Table S1. Elemental composition of the $CoMoO_4/Co_3O_4$ composite measured by EDS.

Elements	Weight%	Atom%
Co	39.6	24.2
Mo	32.2	12.1
O	28.2	63.7

Table S2 Comparison of electrochemical performances of $CoMoO_4/Co_3O_4$ hollow porous octahedrons with previously reported Mo-based electrodes for LIB.

Electrode material	Initial discharge capacity (mA h g^{-1})	Current density (mA g^{-1})	Coulombic efficiency (%)	capacity retention %/cycle	Ref.
Co_3O_4@$CoMoO_4$	1175.1	200	86.9	96.1/100	this work
$CoMoO_4$ hollow nanostructure	1151	500	72	93 / 200	1
Rattle –type $CoMoO_4$ microspheres	1019	500	83	100 /150	2
$CoMoO_4$–carbon microspheres	896	500	72	90 /150	2
3D $CoMoO_4$	1083	100	83.6	87.6/200	3
$CoMoO_4$/carbon fabric	1148	100	83.5	87.7/150	4
$CoMoO_4$	1035	100	76.4	95.6/ 50	5
$CoMoO_4$-G	1046	100	82.7	95.6/ 50	6
$CoMoO_4$/rGO	1211	100	80.9	<50/ 100	7
$CoMoO_4$	1021	100	72.9	<50/100	7

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Table S3 Comparison of capacity performances of $CoMoO_4/Co_3O_4$ hollow porous octahedrons with previously reported pure Co_3O_4 and MoO_3 nanostructured materials.

Electrode material	Initial discharge capacity (mA h g^{-1})	Current density (mA g^{-1})	Coulombic efficiency (%)	capacity retention %/cycle	Ref.
Co_3O_4@$CoMoO_4$	1175.1	200	86.9	96.1/100	this work
Mesoporous Co_3O_4 octahedrons	1567	200	76.3	76/60	8
Co_3O_4 hollow octahedral cages	1100.1	178	75.6	58.1/50	9
Co_3O_4 nano-octahedrons	1118.5	100	73.1	85.4/200	10
Co_3O_4 micro-octahedra	896.2	100	46.8	32.2/200	10
Co_3O_4 octahedrons	1098	100	90.2	86.1/50	11
Porous Co_3O_4 nanobelts	2307	100	54	37.1/60	12
Porous tubular Co_3O_4	1254	100	71.6	48.8/100	13
Co_3O_4 nanoparticles	1151	100	--	65.1/50	14
Co_3O_4 microfibers	1177.4	100	82.9	76.6/200	15
MoO_3 nanorods	1418.3	150	65.2	55/150	16
a-MoO_3 nanorod	1182	30	99.45	58.8/189	17
a-MoO_3 nanoflower	1432.5	550	71.2	56.6/100	18
MoO_3 nanorods	1461.3	550	63.8	14.6/100	19
MoO_3 nanobelt	300	30	--	55.5/50	20

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