Electronic Supplementary Material

$Fe_2Mo_3O_8$ nanoparticles self-assembling 3D mesoporous hollow spheres toward superior lithium storage properties

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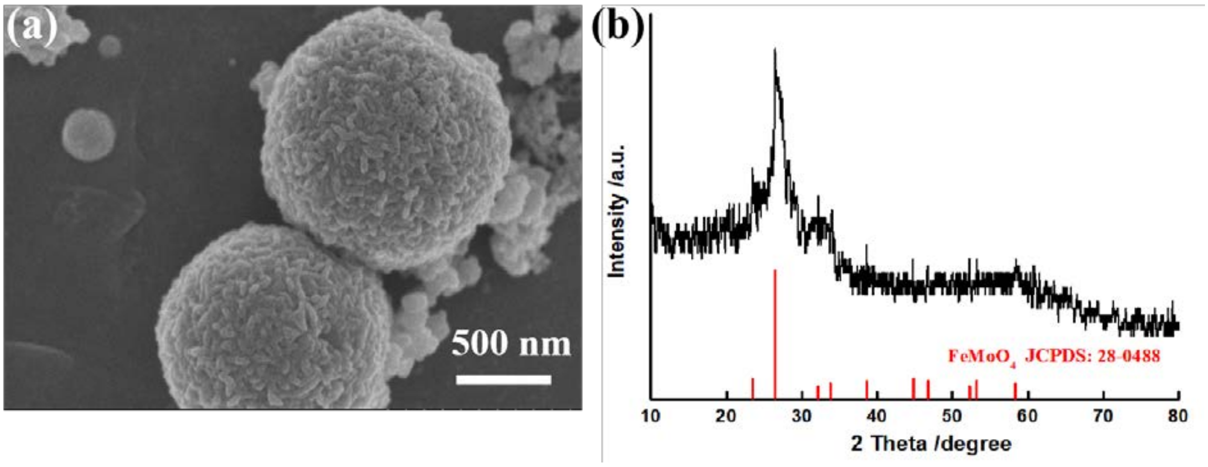


Figure S1. (a) Scanning electron microscopy (SEM) image; (b) X-ray diffraction (XRD) pattern of the Iron(II) molybdate $FeMoO_4$.

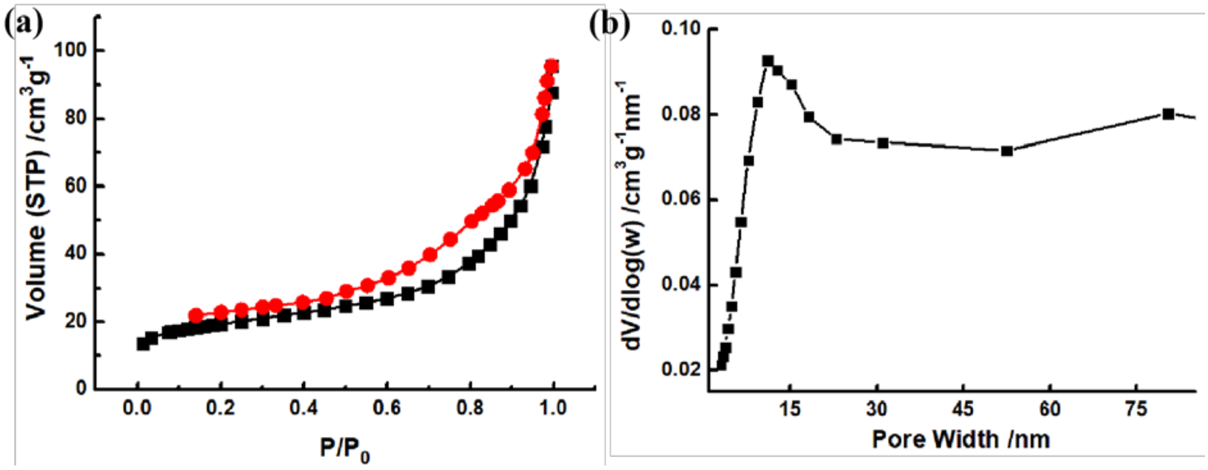


Figure S2. (a) Nitrogen (N_2) adsorption and desorption isotherms; (b) pore size distribution of the Iron (II) molybdenum (IV) oxide $Fe_2Mo_3O_8$ hollow spheres.

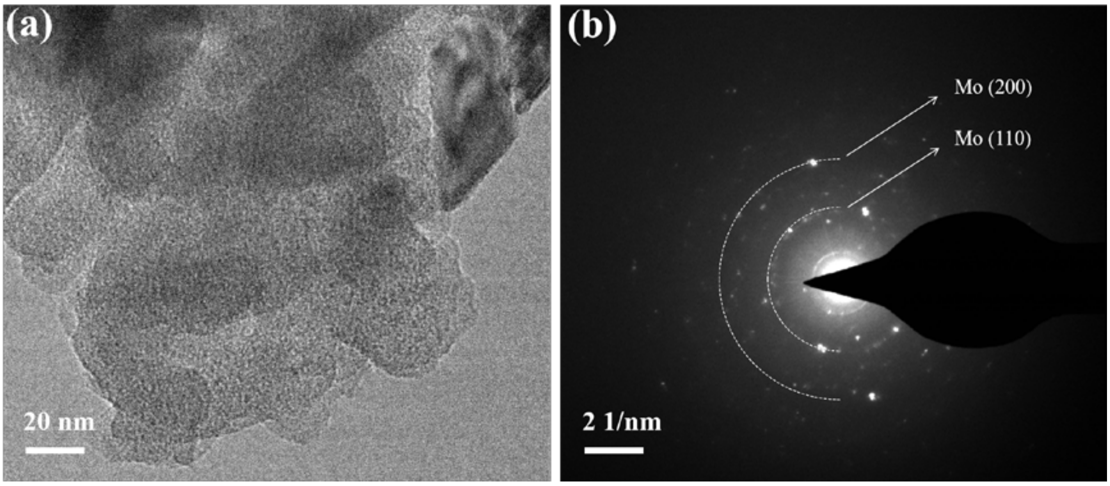


Figure S3. Ex-situ TEM of the $Fe_2Mo_3O_8$ electrode during 1st discharge to 0.01 V. (a) TEM image and (b) selective area electron diffraction (SAED) pattern.

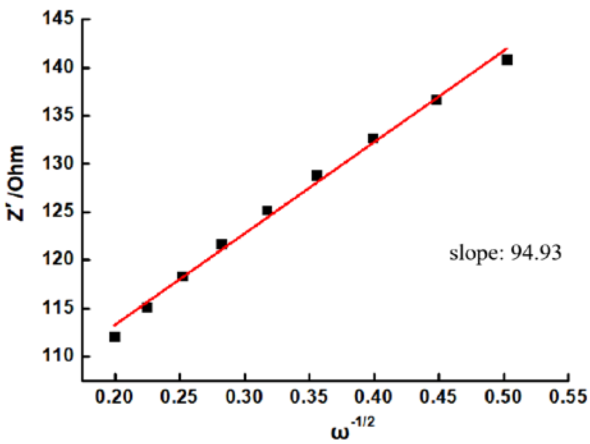


Figure S4. Liner fitting of Z´ versus $\omega^{-1/2}$ of $Fe_2Mo_3O_8$ electrode, calculated from the EIS data. The Li^+ diffusion coefficient (D_{Li^+}) is calculated according to the following equation: $D_{Li^+}=R^2T^2/2A^2n^4F^4c^2\sigma^2$, where R is the gas constant, T is the absolute temperature, A is the area of electrode, n is the number of electron transfers, F is the Faraday constant, C is the concentration of Li^+, and σ is the slope of the line of $Z'\sim\omega^{-1/2}$.

Table S1. The impedance parameters derived from the equivalent circuit model of $Fe_2Mo_3O_8$

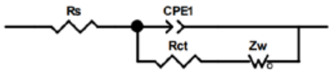
	Rs	Rct
		
Before cycle	2.947	279.4
After 1st cycle	3.703	76.06

Table S2. Comparison of electrochemical performance of $M_2Mo_3O_8$ molybdates anode materials

Molybdates	Initial D/C capacity (mAh g^{-1})	Capacity (mAh g^{-1})	Number of cycles and current density	Reference
$Fe_2Mo_3O_8$ hollow spheres	1189/997	866	70 cycles at 0.1 A g^{-1}	This work
$Fe_2Mo_3O_8$ block	899/- a)	420	100 cycles at 0.05 A g^{-1}	[1]
$LiYMo_3O_8$	305/180	385	120 cycles at 0.03 A g^{-1}	[2]
$Mn_2Mo_3O_8$	710/565	205	50 cycles at 0.03 A g^{-1}	
$Co_2Mo_3O_8$	1185/850	790	60 cycles at 0.06 A g^{-1}	[3]
$Cu_3Mo_2O_9$ micropompons	1224/432	153	100 cycles at 0.1 A g^{-1}	[4]
$Fe_2Mo_3O_8$-RGO	1275.2/923.5	835	40 cycles at 0.2 A g^{-1}	[5]
$Fe_2Mo_3O_8$-EG	1224/945	490	50 cycles at 0.05 A g^{-1}	[6]
FLG-$Co_2Mo_3O_8$	1229/827	762	50 cycles at 0.09 A g^{-1}	
FLG-$Mn_2Mo_3O_8$	1349/942	523	50 cycles at 0.09 A g^{-1}	[7]
FLG-$Zn_2Mo_3O_8$	787/403	554	50 cycles at 0.09 A g^{-1}	

D/C: Discharge/Charge

RGO: Reduced Graphene Oxide

EG: Exfoliated Graphene Oxide

FLG: Few Layered Graphene

a) -: not available

References

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