Confinement of PMo_{12} in Hollow SiO_2-PMo_{12}@rGO Nanospheres for High Performance Lithium Storage

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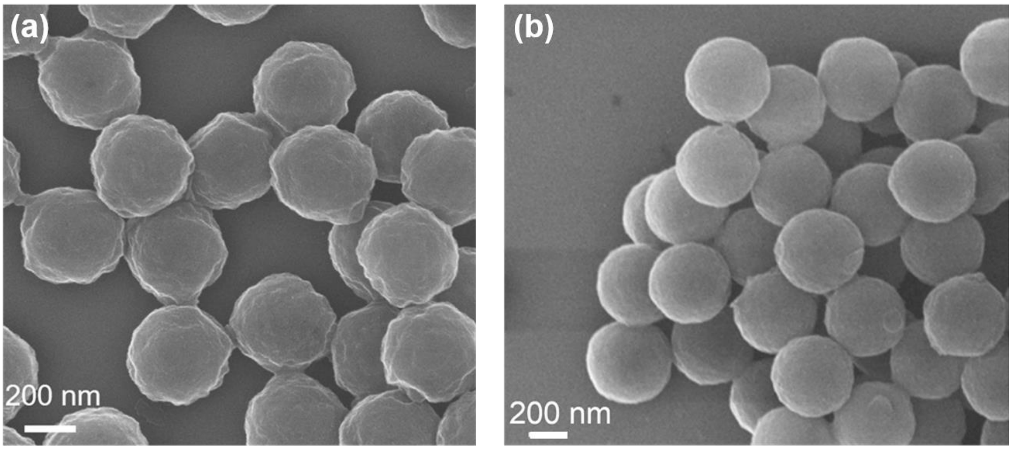

Fig. S1 SEM images of (a) PMMA spheres and (b) PMMA@SiO_2 spheres.

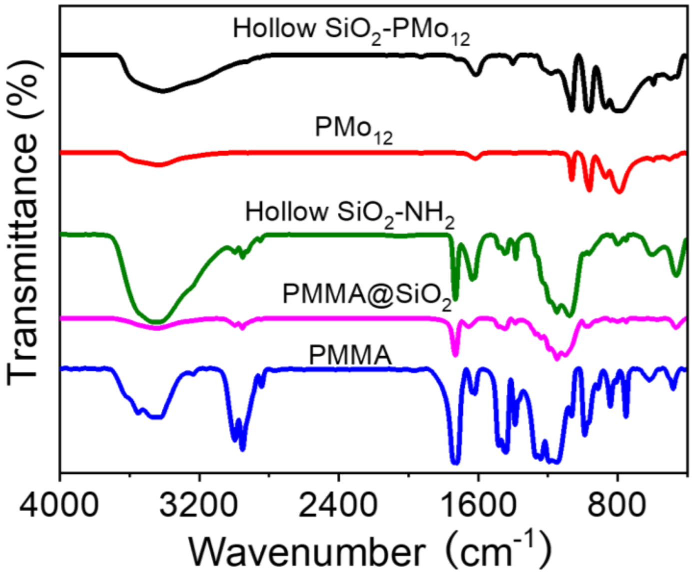

Fig. S2 FT-IR spectra of PMMA, PMMA@SiO_2, SiO_2-NH_2, PMo_{12} and SiO_2-PMo_{12}, respectively.

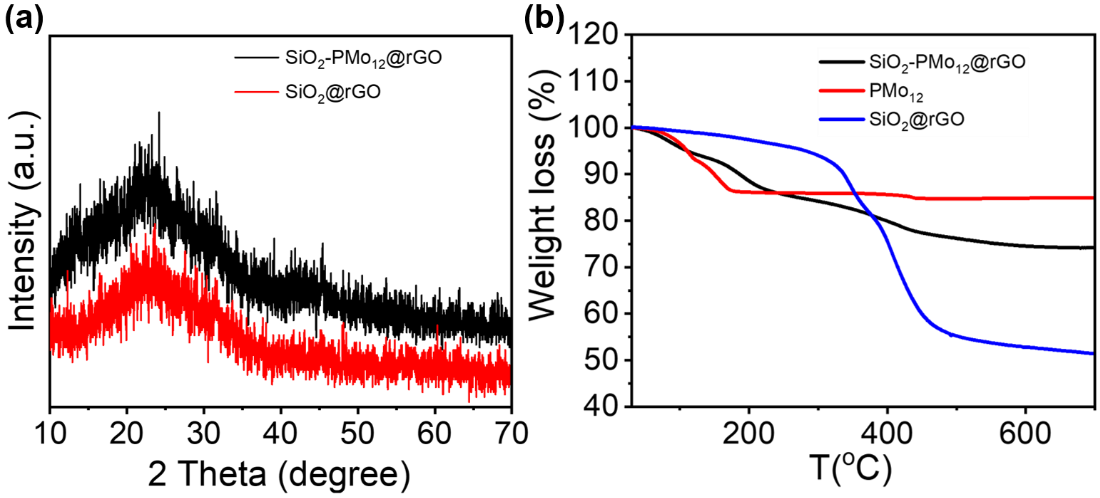

Fig. S3 (a) XRD patterns of SiO_2-PMo_{12}@rGO and SiO_2@rGO. (b) TG curves of SiO_2-PMo_{12}@rGO, rGO and PMo_{12}.

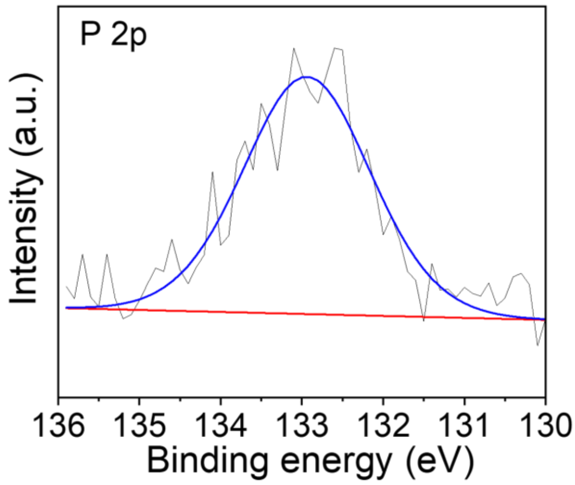

Fig. S4 High-resolution XPS spectrum of P 2p peak of the SiO_2-PMo_{12}@rGO.

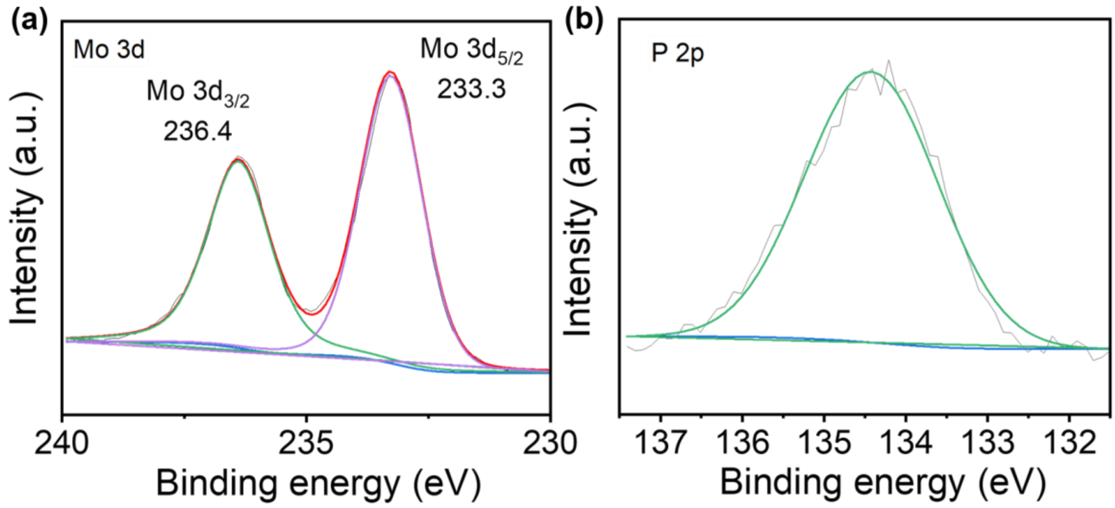

Fig. S5 High-resolution XPS spectra of Mo 3d and P 2p peaks of PMo_{12}.

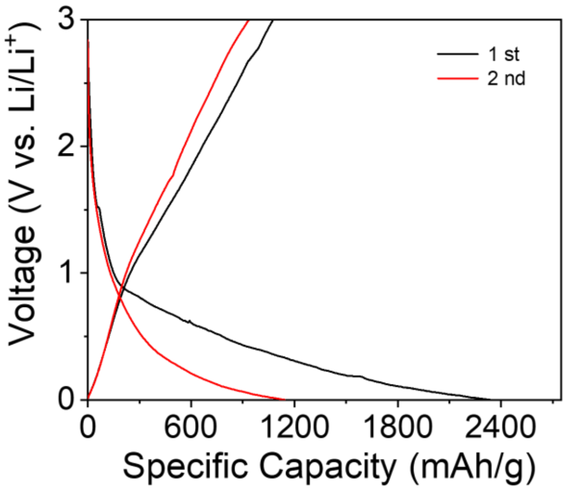

Fig. S6 The charge-discharge profiles for different cycles of SiO_2-PMo_{12}@rGO under 100 mA g^{-1}.

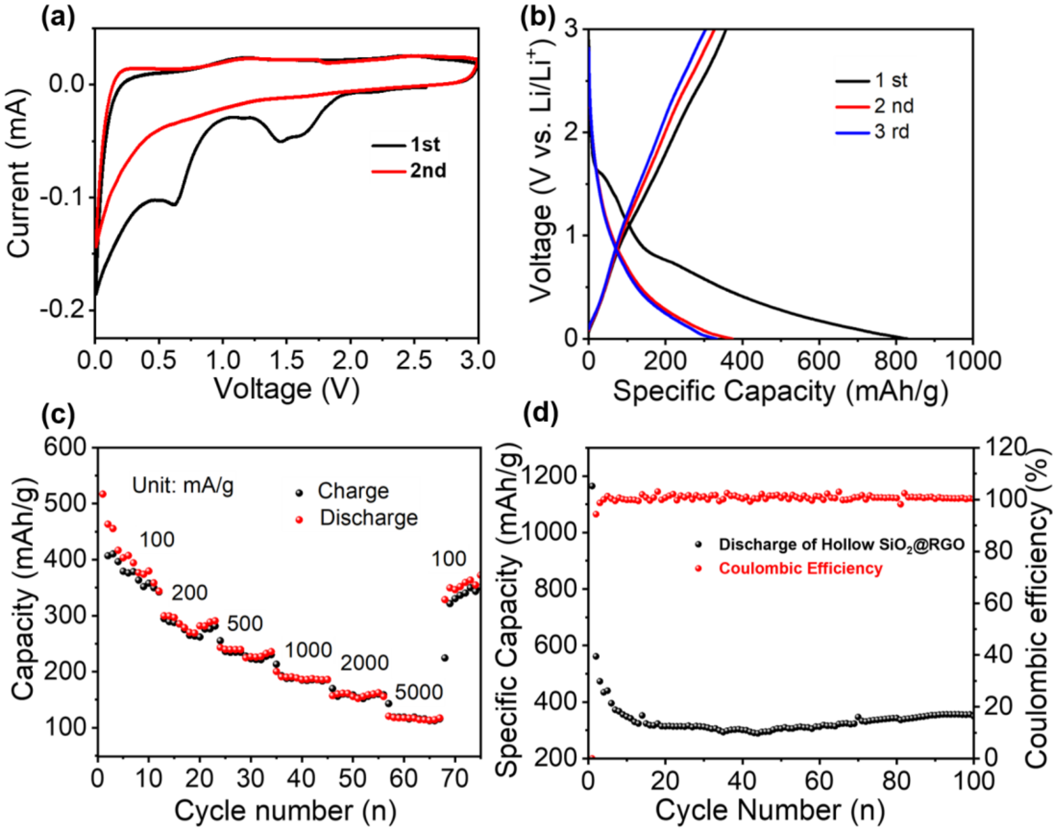

Fig. S7 (a) The CV of the SiO_2@rGO; (b) The charge-discharge profiles for different cycles of SiO_2@rGO under 100 mA g^{-1}; (c) Rate performance of SiO_2@rGO electrode; (d) Cycling performance and CE of SiO_2@rGO under 100 mA/g within a voltage of 0.01-3.0 V.

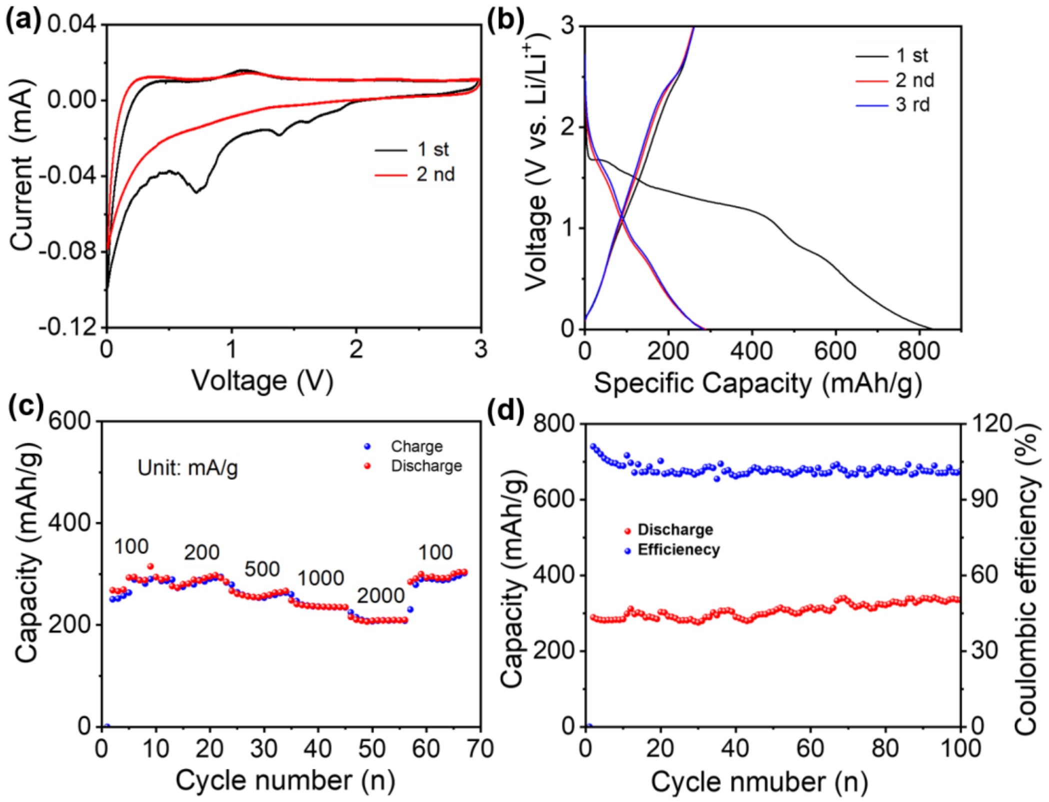

Fig. S8 (a) The CV of the SiO_2-PMo_{12}. (b) The charge-discharge profiles for different cycles of SiO_2-PMo_{12} under 100 mA g^{-1}. (c) Rate performance of SiO_2-PMo_{12} electrode. (d) Cycling performance and CE of SiO_2-PMo_{12} under 100 mA g^{-1} within a voltage of 0.01-3.0 V.

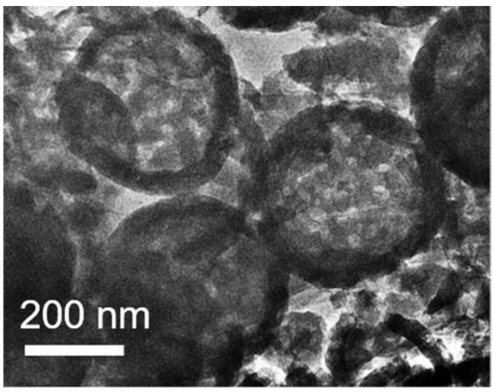

Fig. S9 TEM image of SiO_2-PMo_{12}@rGO after 100 cycles at 100 mA g^{-1}.

Table S1. Comparison of SiO_2-PMo_{12}@rGO with other reported SiO_2- and POM-based electrodes as LIBs anode materials.

Electrode materials	Current density ($mA\ g^{-1}$)	Capacity ($mA\ h\ g^{-1}$)	Cycles	Ref.
Hollow SiO_2@CN	100	800	100	1
C/SiO_2/C	300	300	70	2
SiO_2/C hollow spheres	100	624	100	3
H-SiO_2/C	200	564	400	4
CoW-POM-Cu foam	100	737	100	5
Py-Anderson-CNTs	0.5 $mA\ cm^{-2}$	665	100	6
PMo_{12}–PPy/RGO	100	1000	50	7
Hollow SiO_2-PMo_{12}@rGO	100	720	100	This work

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