

Supplementary Information

POM@CNT hybrid nanostructure enabling fast kinetics and high capacity in lithium-ion batteries

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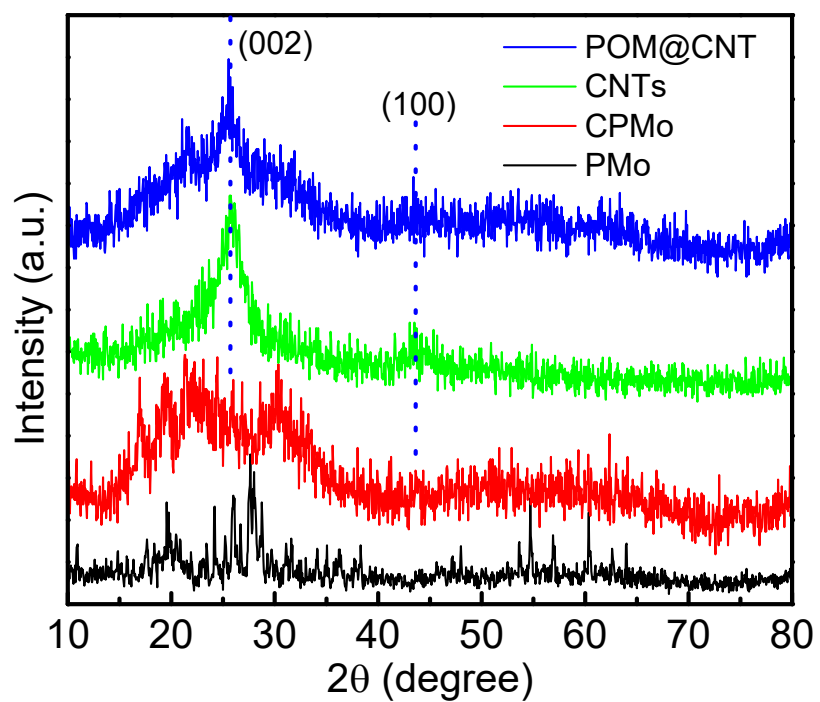


Figure S1. XRD patterns of POM@CNT, CNTs, CPMo and PMo.

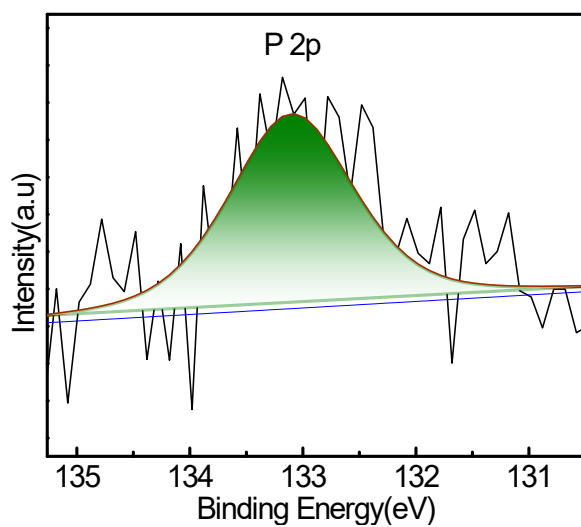


Figure S2. High resolution XPS spectra of P 2p peak in POM@CNT composite.

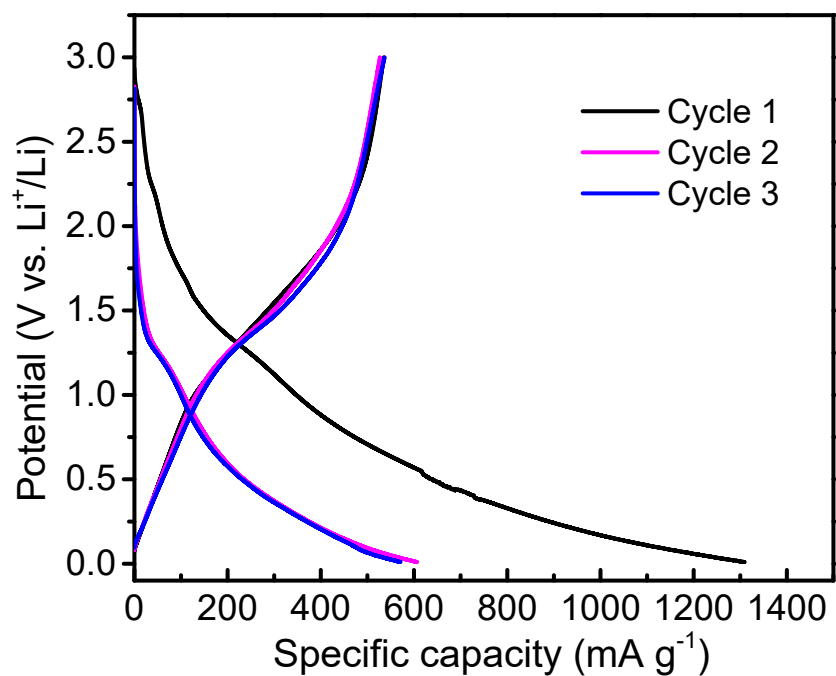


Figure S3. Galvanostatic charge/discharge profiles for 1st, 2nd and 3rd cycle of PMo at current density of 0.1 A g⁻¹.

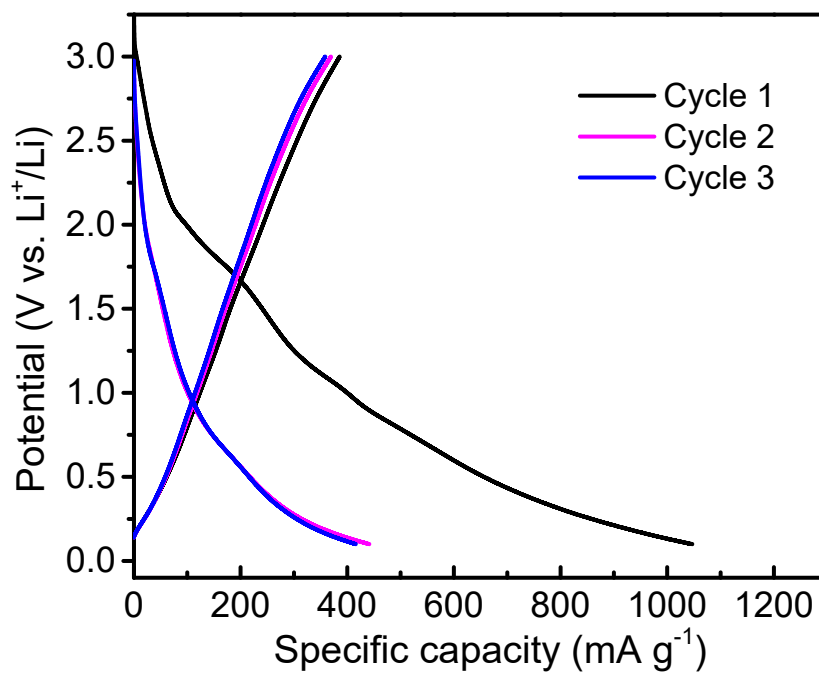


Figure S4. Galvanostatic charge/discharge profiles for 1st, 2nd and 3rd cycle of CNTs at current density of 0.1 A g⁻¹.

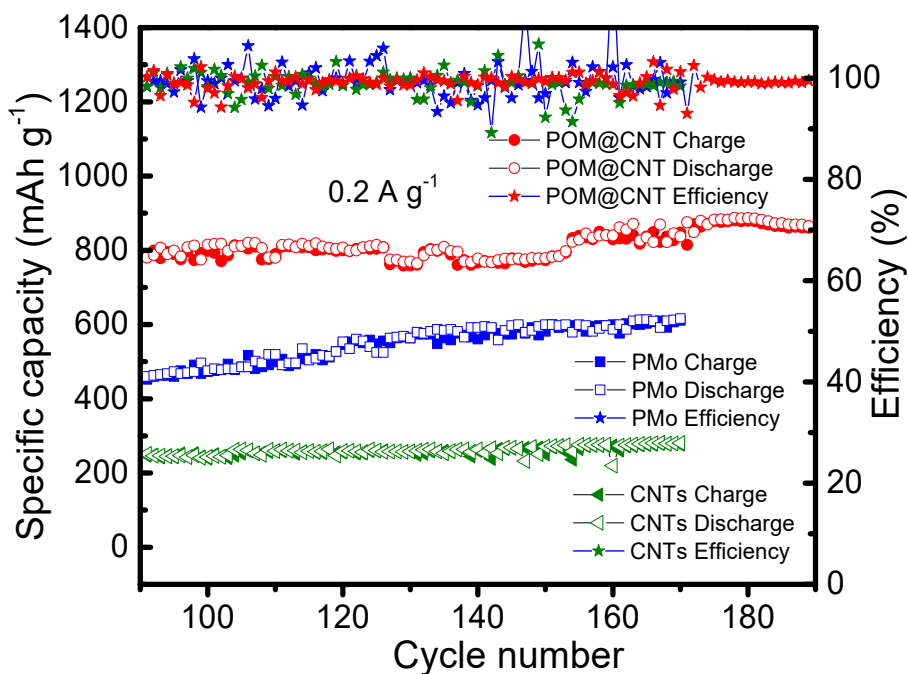


Figure S5. Cyclic performance and of POM@CNT, PMo and CNTs at a current density of 0.2 A g⁻¹ (extended data of Figure 5c).

Table S1. The assignment of FTIR spectra

PMo (cm ⁻¹)	CNTs (cm ⁻¹)	POM@CNT (cm ⁻¹)	Assignment
	3400 [1]	3328	$\nu_{as}(-OH)$
		2923 [2, 3]	$\nu_{as}(C-H)$
		2852 [2, 3]	$\nu_{as}(C-H)$
	1700 [1]		$\nu_{as}(COOH)$
		1487 [4]	$\nu_{as}(C-N)$
1064 [5-7]		1064	$\nu_{as}(P-O)$
992 [5-7]		992	$\nu_{as}(M=O)$
872 [5-7]		872	$\nu_{as}(Mo-O_c-Mo)$
792 [5-7]		792	$\nu_{as}(Mo-O_c-Mo)$

Table S2. Fitting parameters according to the EIS measurements.

No.	Material	Rs (Ω)	Rct (Ω)
1	POM@CNT	5.15	53.6
2	PMo	6.81	82.9
3	CNTs	7.17	96.6