Supporting information

High-performance Spinel $LiMn_2O_4$@Carbon Core-shell Cathode Materials for Li-ion Batteries

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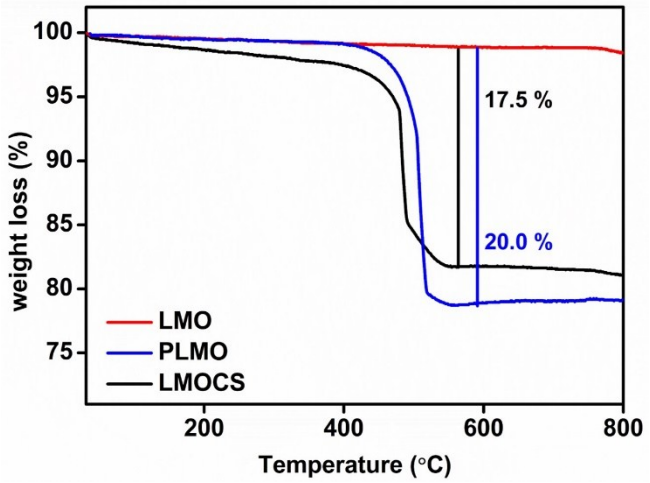

Fig. S1 Thermogravimetric curves of neat LMO, physically blended LMO-carbon composite (PLMO) and mechanical force reinforced carbon composite (LMOCS) in oxygen at 10˚ min.

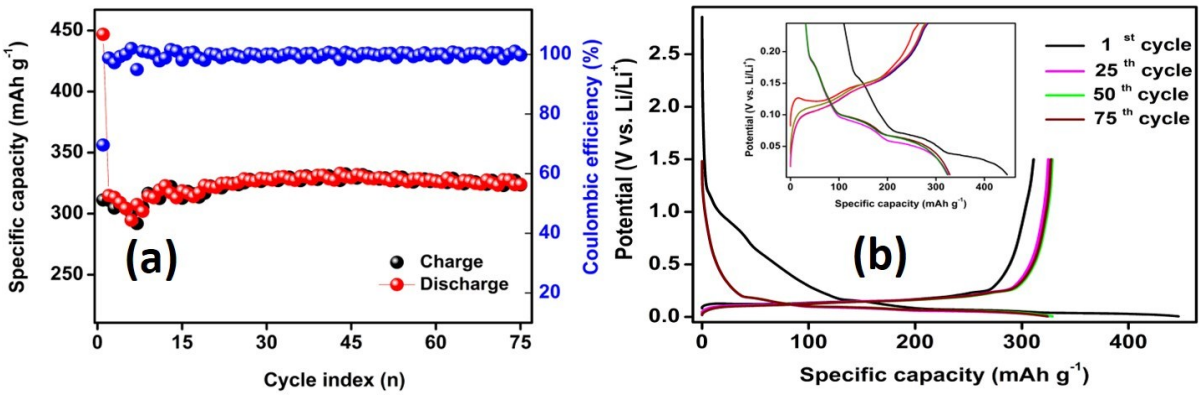

Fig. S2 (a) Capacity retention as a function of cycle number and (b) Galvanostatic charge/discharge profiles at a current density of 0.1 A g^{-1} for MCMB anode (inset: magnified view).

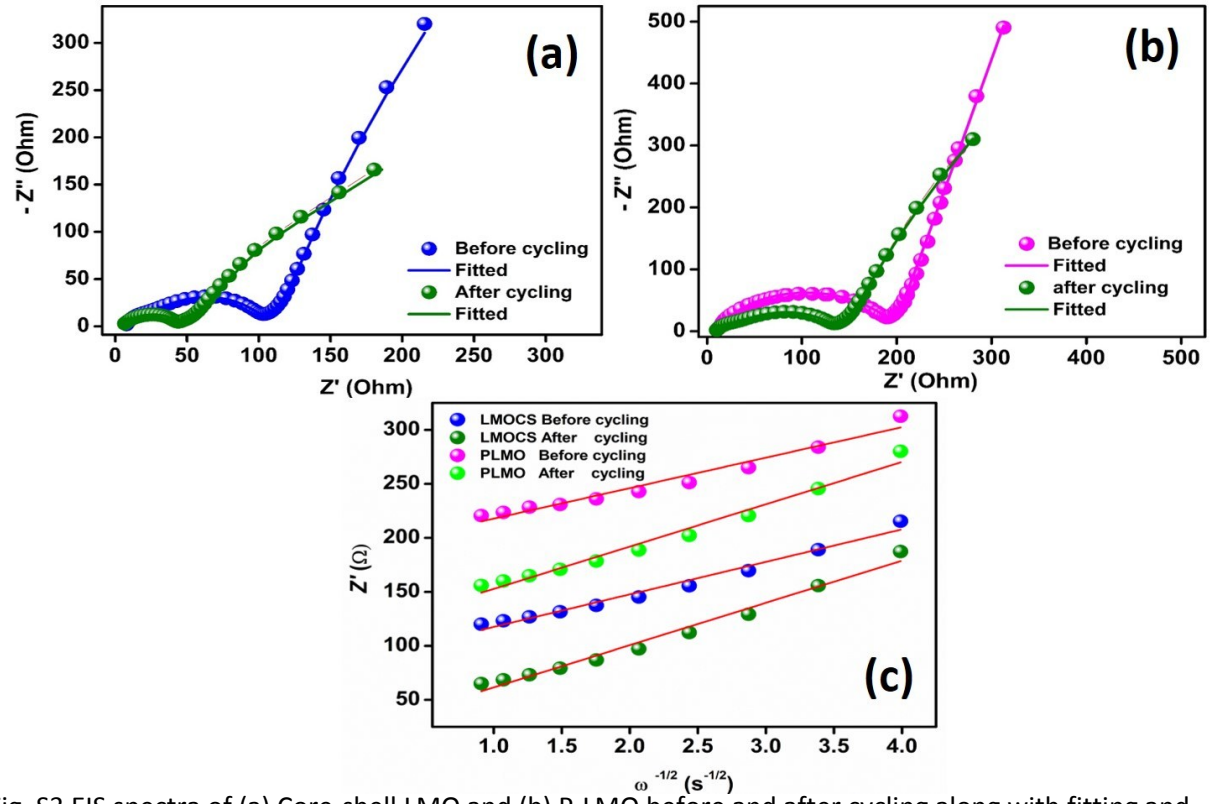

Fig. S3 EIS spectra of (a) Core-shell LMO and (b) P-LMO before and after cycling along with fitting and (c) Graph of Z_{re} plotted against $\omega^{-1/2}$ at low frequency region for LMOCS and PLMO before and after cycling.

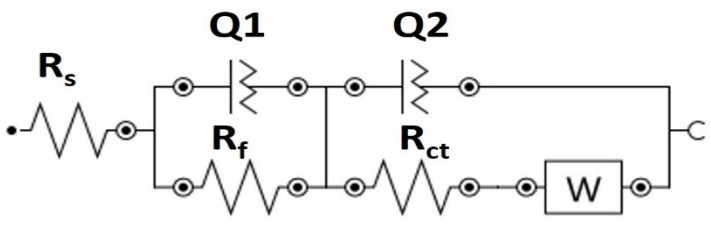

Fig. S4 Randle's equivalent circuit generated by the fitting software.

Table. S1 Electrochemical performance comparison table for different LMO materials

S. no	Materials	C- Rate	Specific capacity (mAh g^{-1})	References
1.	MnO coated LMO	0.5	105	2
2.	S-doped LMO	1.0	105	7
3.	La-Sr-Mn-O coated LMO	0.2	122	12
4.	MWCNT-LMO	0.5	70	15
5.	N-doped carbon	0.2	123	16
6.	LMO with FeF_3 coated	0.5	100	20
7.	Mechano-fused core-shell	0.2	129	Our work
	type LMO-carbon composite	1.0	118	