Electronic Supplementary Material (ESI) for Sustainable Energy & Fuels.

Electronic Supplementary Information

Solvent-controlled solid-electrolyte interphase layer composition on high performance $Li_4Ti_5O_{12}$ anode for Na-ion battery applications

Binitha Gangaja, Shantikumar Nair and Dhamodaran Santhanagopalan*

Centre for Nanosciences and Molecular Medicine, Amrita Vishwa Vidyapeetham, AIMS (P.O), Kochi, India 682041

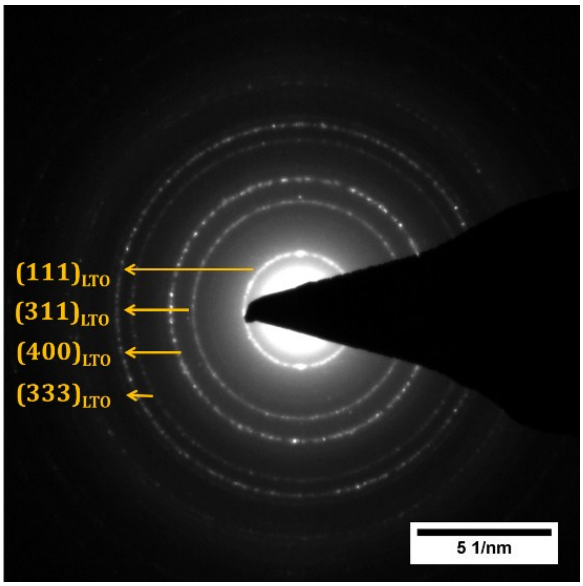

Figure S1: Selected area diffraction pattern of surface engineered LTO

* Corresponding Author E-mail: dsgopalan20710@aims.amrita.edu

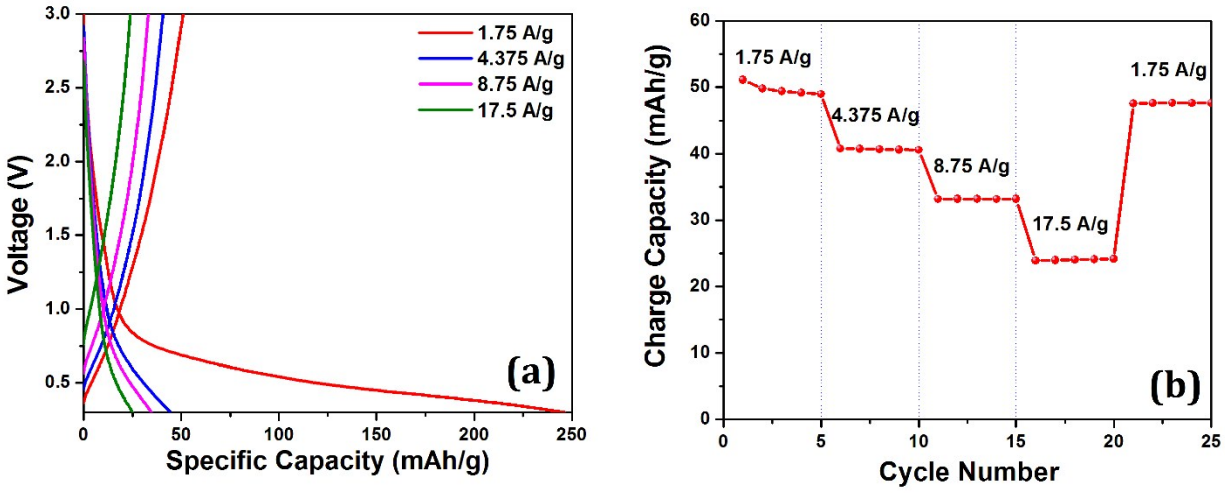

Figure S2: Rate performance of bare CNT electrode to investigate the capacity contribution in LTO electrode (a) charge-discharge profile at different current density and (b) rate plot

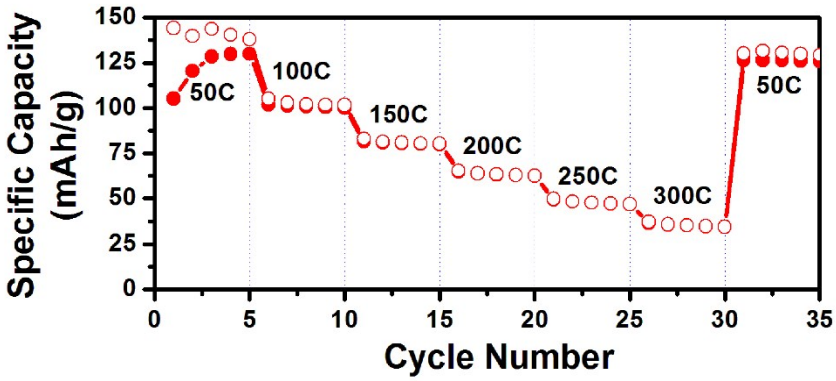

Figure S3: Rate performance of LTO-DiG electrode from 50C to 300C, 5 cycles each

Table S1: Literature comparison of high rate performance of LTO anode for sodium ion battery applications

Sl.No.	Details	C-Rate	Specific Capacity (mAh/g)	Reference*
1	B-doped LTO	50C	70	7
2	LTO nanosheets	40C	68	9
3	G-LTO	60C	35	11
4	P-LTO	10C	110	30
5	Hierarchically porous LTO	30C	~10	31
6	Na-doped LTO	8C	56	32
7	C-coated LTO nanowire	100C	38 (Discharge limited)	33
8	LTO nanosheet RGO	10C	42.5	34
9	LTO-TiO2 nanowire	15C	92.4	35
10	LTO-MWCNT	5C	82.7	36
11	Textured LTO thin film	4.4C	50	37
12	LTO nanorod	2C	82	38
13	This work	100C 300C	93 (Both C/D at same rate) # 37 (Both C/D at same rate)	

* References are listed in the main paper; # C/D = charge / discharge

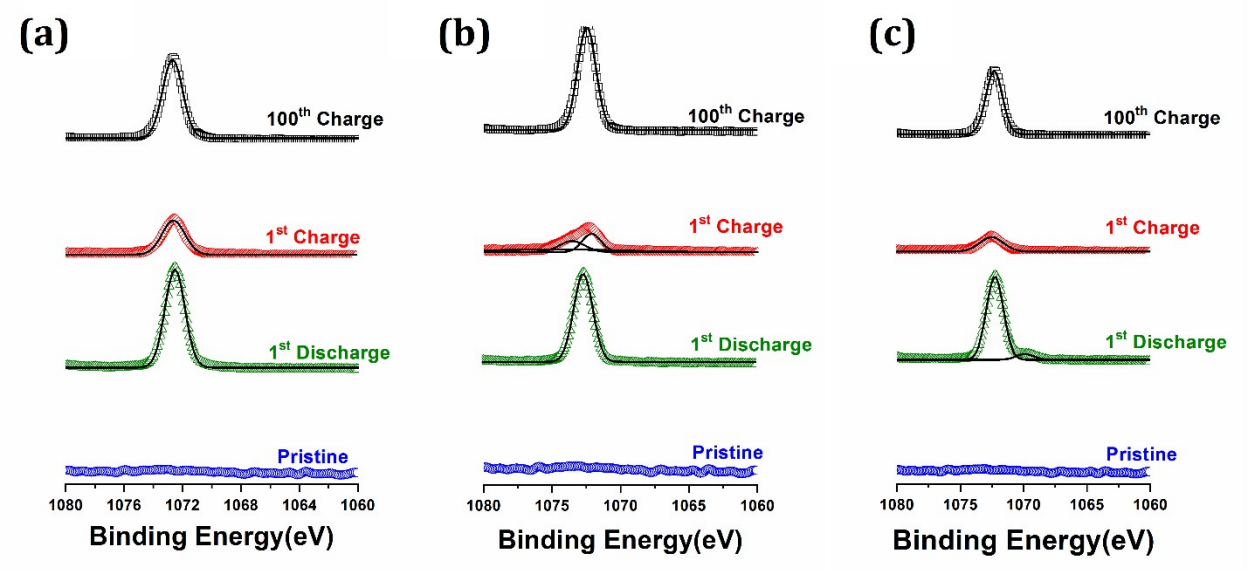

Figure S4: Na 1s core level spectra at different stages of sodiation or desodiation (a) LTO-DiG (b) LTO-EC/DMC and (c) LTO-PC.

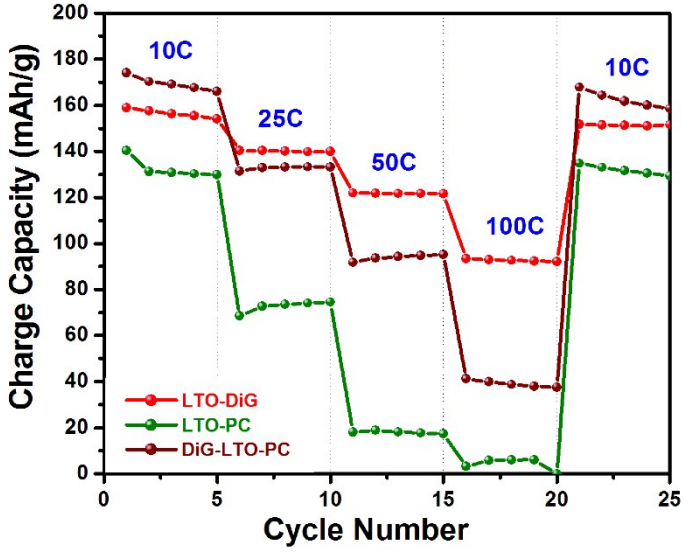

Figure S5: Comparison of rate performance from 10C to 100C rate of LTO-DiG, LTO-PC and DiG-LTO-PC ($NaPF_6$-DiG stabilized Na-metal coupled with LTO-PC electrode-electrolyte formulation) half cells.