Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A.

Supporting Information

Enabling a High Capacity and Long Cycle Life of Nano-Si Anode by Building a Stable Solid Interface with Li^+-Conducting Polymer

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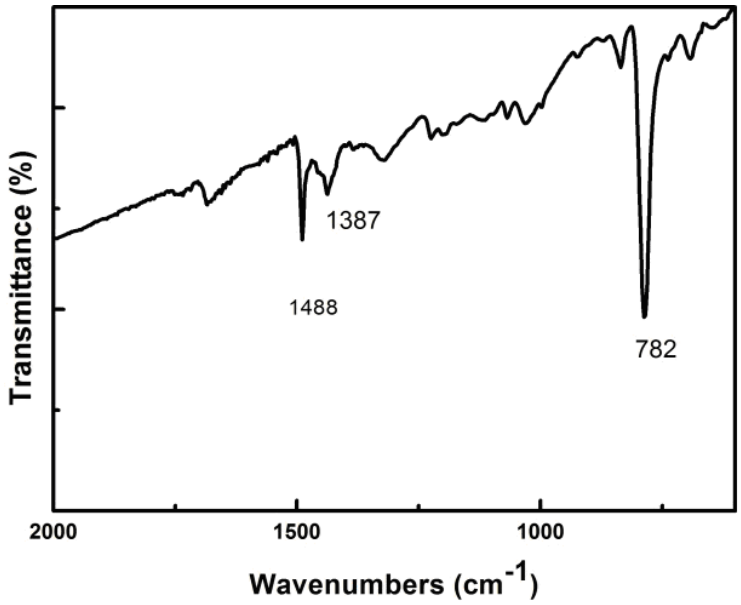

Fig. S1. FTIR spectra of the Si/PBT composite.

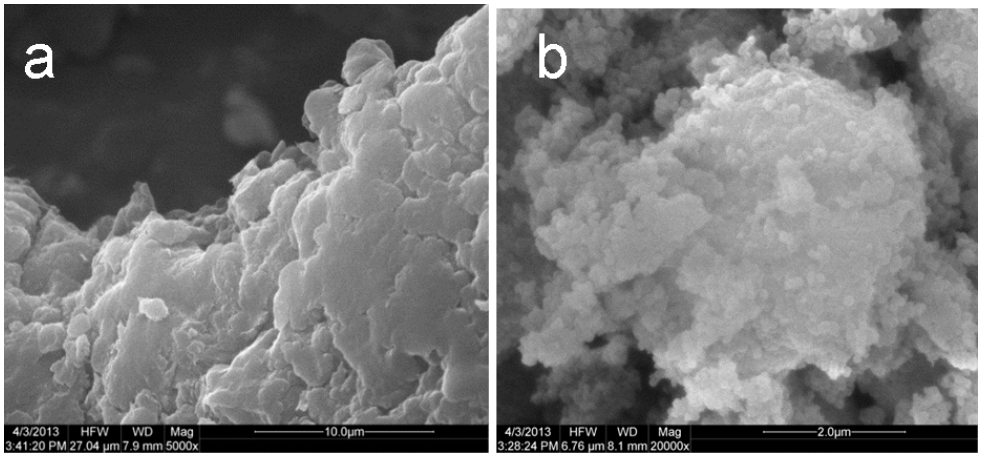

Fig. S2. SEM images of PBT (a) and (b) the Si/PBT composite.

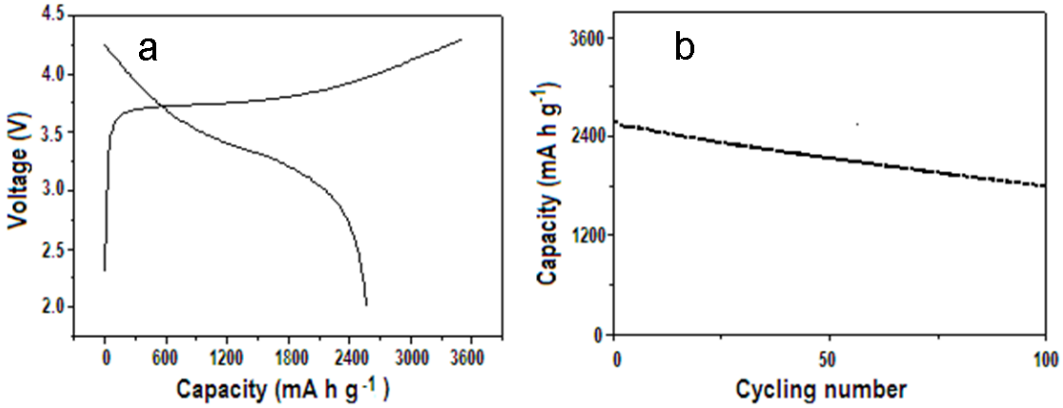

Fig.S3. Charge-discharge profile (a) and (b) cycling performance of the coin-type full cells using the Si/PBT as anode and $LiCo_{1/3}Ni_{1/3}Mn_{1/3}O_2$ (NCM) as cathode. The charge-discharge capacities were calculated according to the mass weight of the Si/PBT anode. Charge and discharge currents were set at 500 mA g^{-1}.

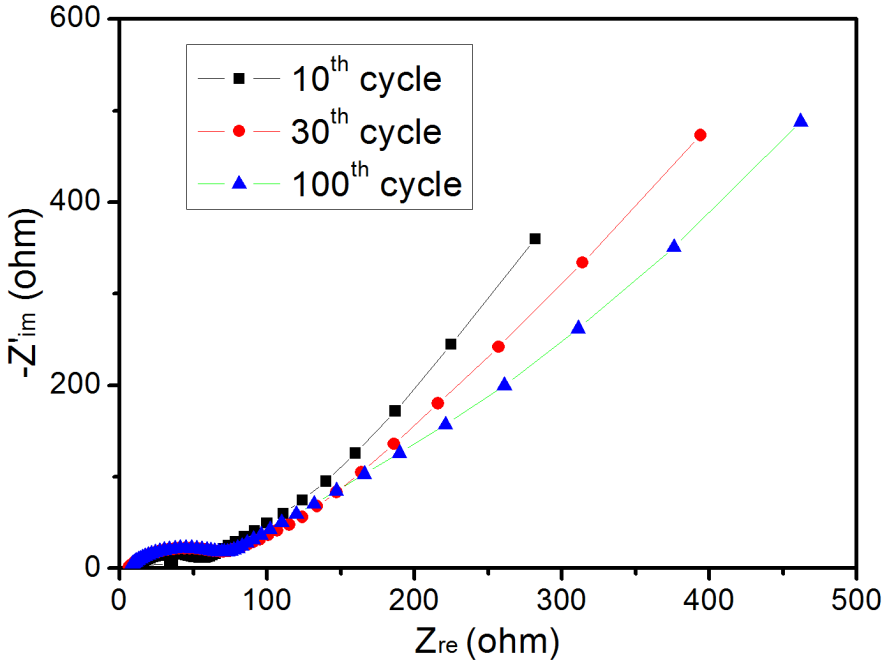

Fig.S4. The electrochemical impedance spectra (EIS) of the Si/PBT electrode at different cycles.

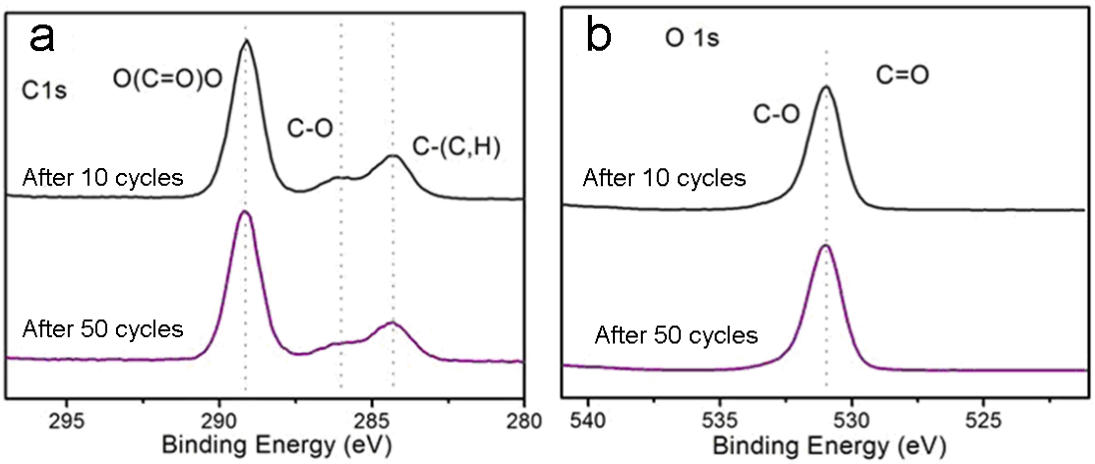

Fig.S5. XPS spectra of C 1S (a) and (b) O 1S collected from the surface of Si/PBT electrode at different cycles. The charge/discharge current density is 3 A g^{-1}.

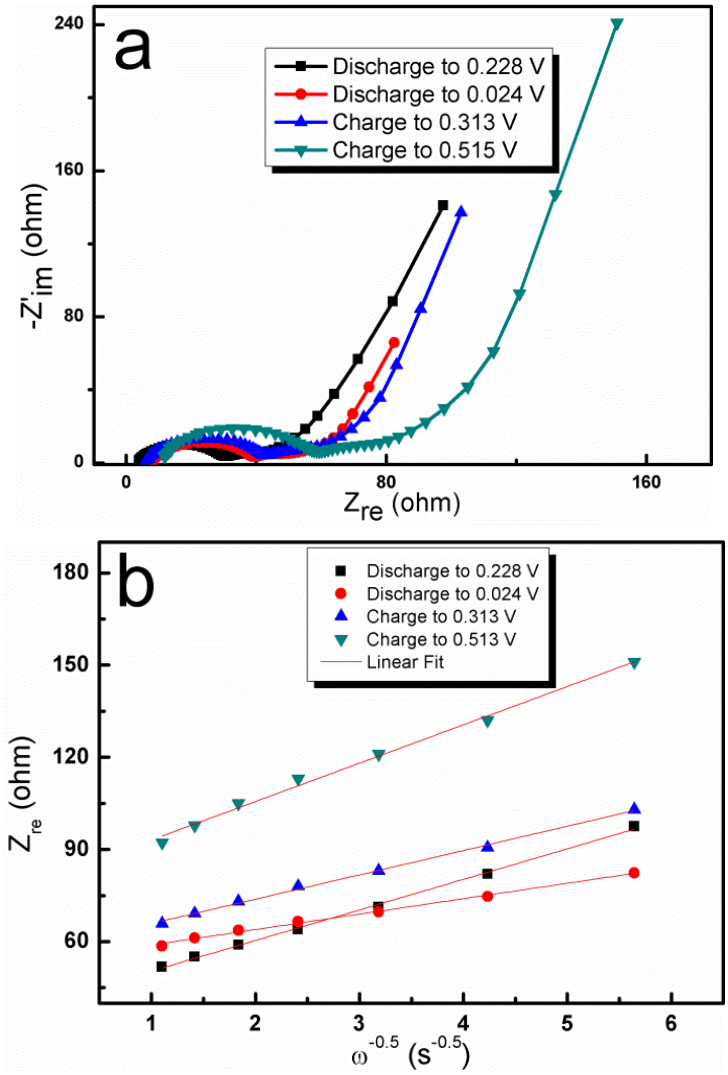

Fig. S6. EIS spectra of the PBT electrode at different charge/discharge states (a) and (b) the relationship between Z_{re} and $\omega^{-0.5}$ at low frequency region

Table S1. The Warburg coefficient derived from EIS spectra (Figure S4) and diffusion coefficient of Li^+ ion in the PBT electrode at different charge and discharge states.

	Discharge (V, vs Li^+/Li)		Charge (V, vs Li^+/Li)	
	0.228	0.024	0.313	0.513
σ_w(Ω $s^{-0.5}$)	9.95	5.02	7.92	12.49
D_{Li}(cm^2 S^{-1})	2.07×10^{-9}	6.92×10^{-10}	1.10×10^{-8}	9.60×10^{-9}