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

Supporting Information

Inducing ordered Li deposition on PANI-decorated Cu mesh for advanced Li anode

Xin-Yu Hu,‡[a] Pan Xu,‡[a] Shengwen Deng,[a] Jie Lei,[a] Xiaodong Lin,[a] Qi-Hui Wu,[b] Mingsen Zheng*[a] and Quanfeng Dong[a]

[a] State Key Laboratory of Physical Chemistry of Solid Surfaces, Department of Chemistry, College of Chemistry and Chemical Engineering, Collaborative Innovation Center of Chemistry for Energy Materials (*i*ChEM), Xiamen University, Xiamen, Fujian 361005, China

[b] College of Mechanical and Energy Engineering, Jimei University, Xiamen 361021, China.

‡These authors contributed equally to this work.

*Correspondence: mszheng@xmu.edu.cn

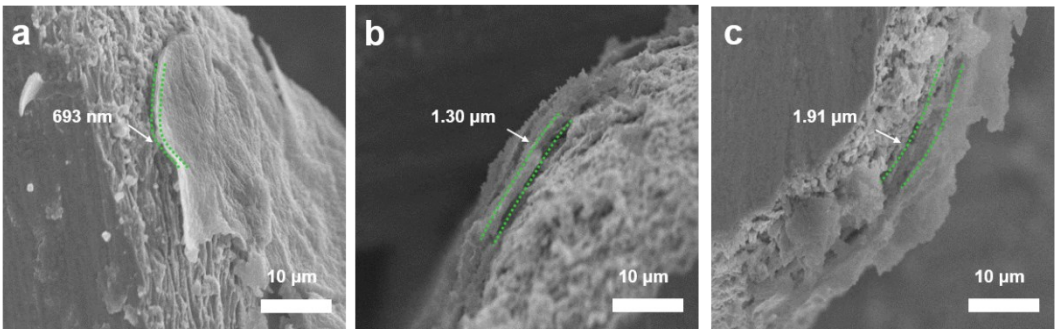

Figure S1. Thickness of PANI micro-sheets with different reaction time of (a) 1.5 h, (b) 2 h and (c) 2.5 h.

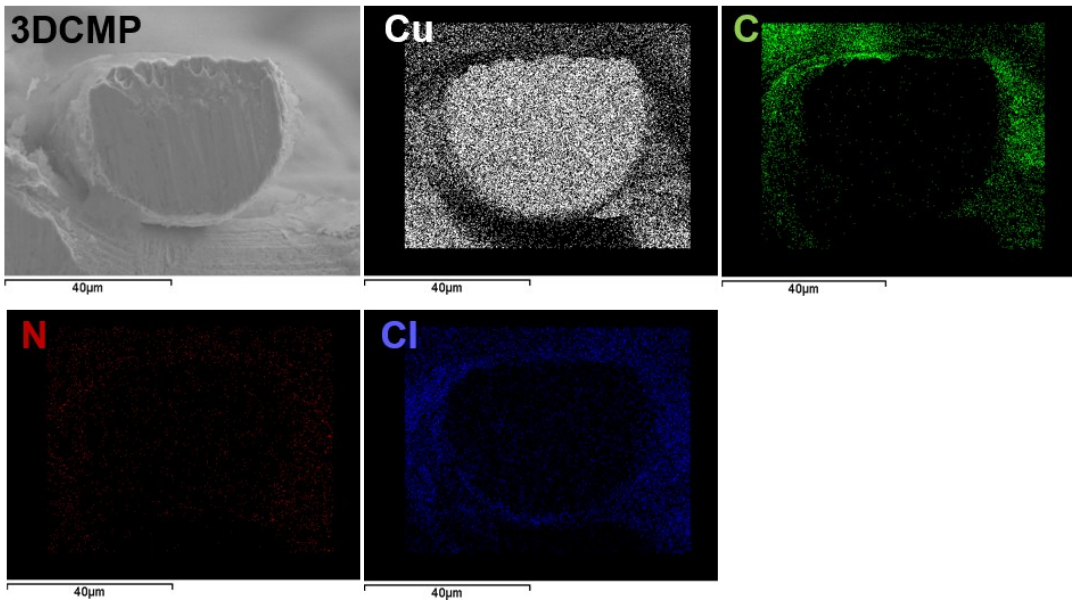

Figure S2. The side section EDS-maps of the 3DCMP electrode.

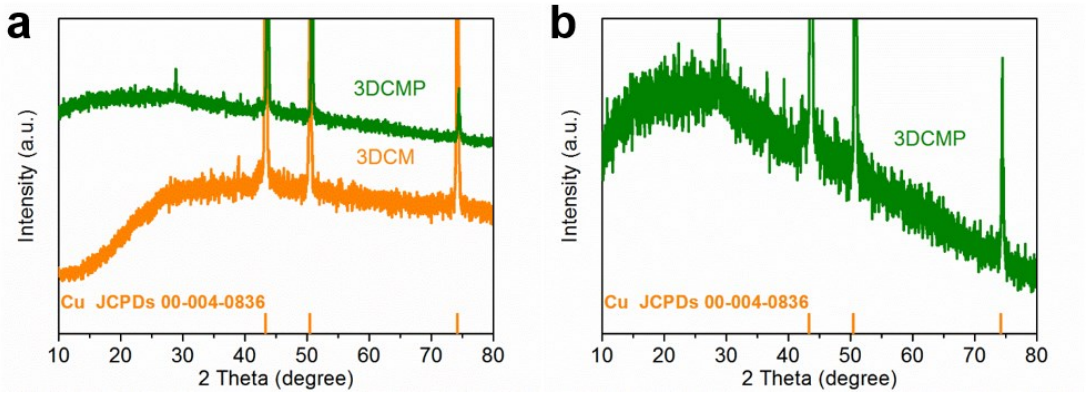

Figure S3. The enlarged XRD pattern of the 3DCM and 3DCMP electrode.

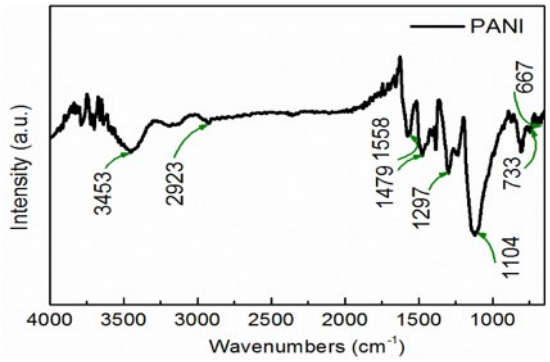

Figure S4. FTIR spectroscopy of PANI powders.

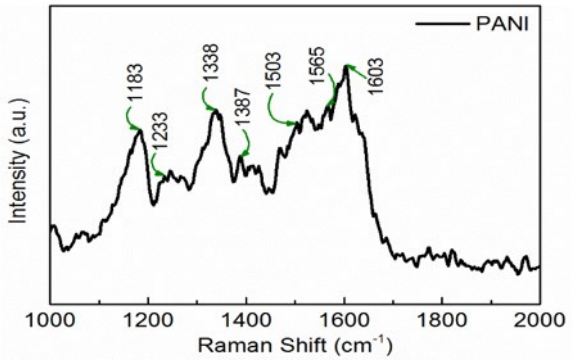

Figure S5. Raman spectroscopy of PANI powders.

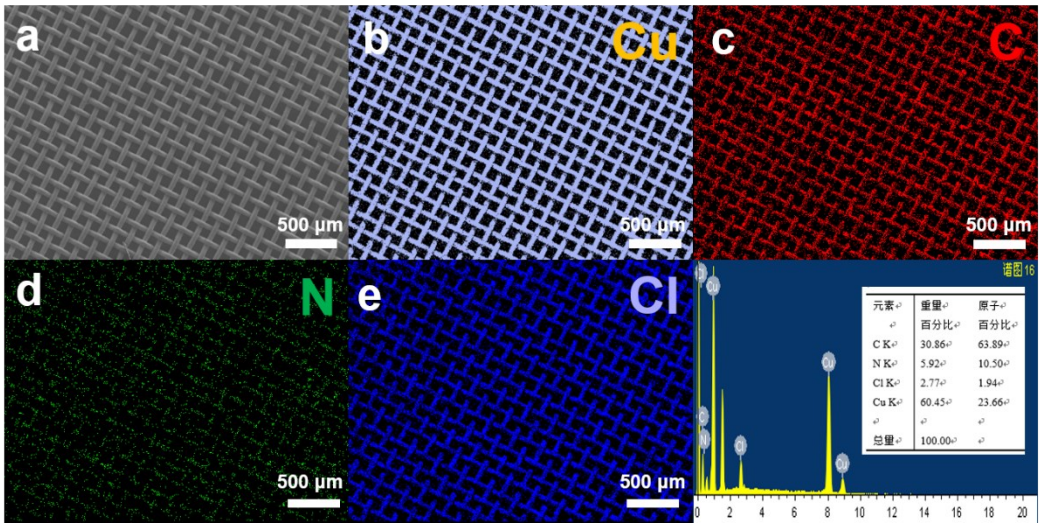

Figure S6. The SEM-EDS maps and energy spectrum analysis of the 3DCMP electrode. To avoid confusion of the C element, we use aluminum foil instead of conductive adhesive for the test.

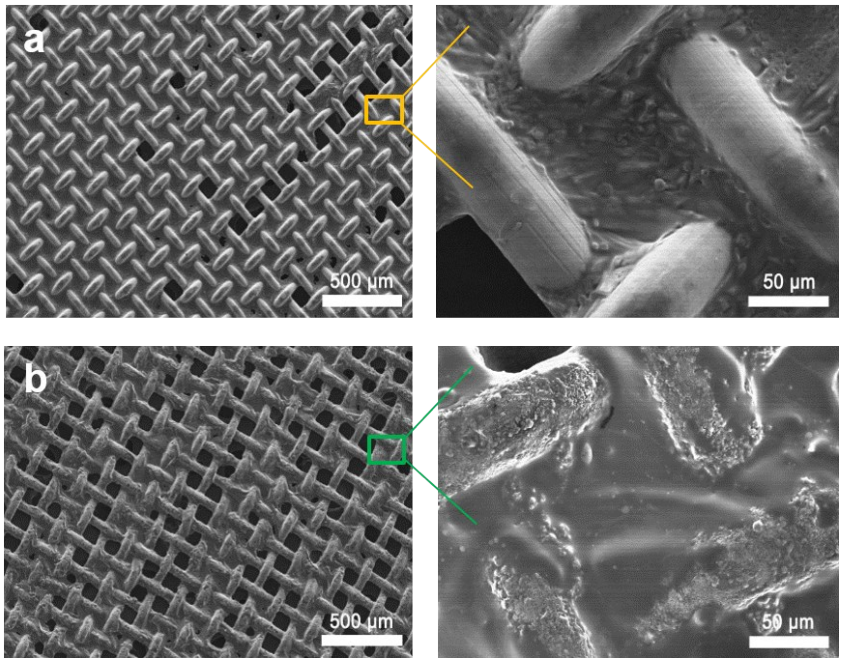

Figure S7. The SEI morphologies of the (a) 3DCM and (b) 3DCMP anodes after the half-cells discharged to 1.0 V.

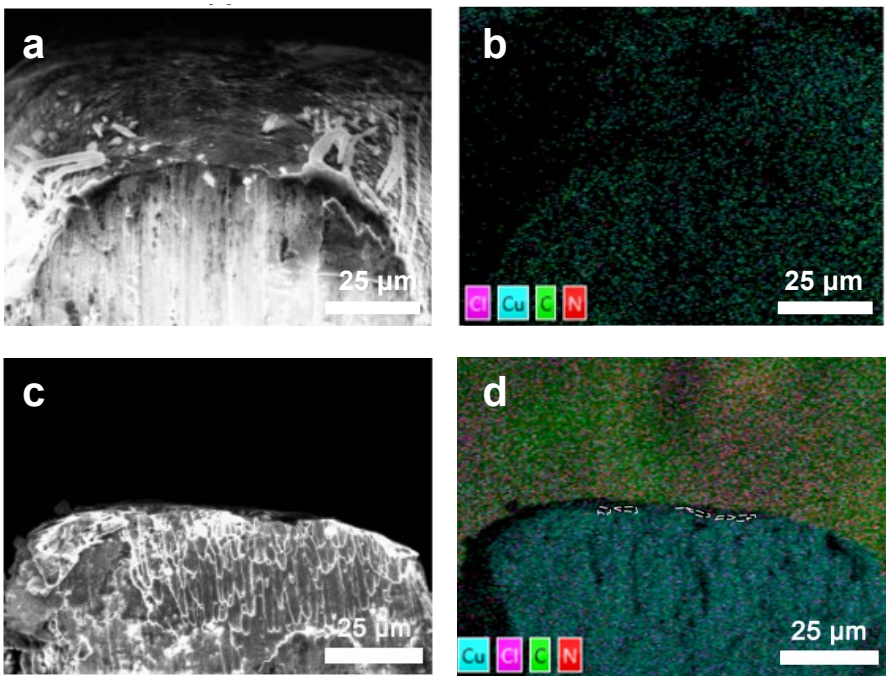

Figure S8. The side section SEM images and EDS-maps of the (a, b) 3DCM and (c, d) 3DCMP anodes after deposited 3 mAh cm^{-2} Li.

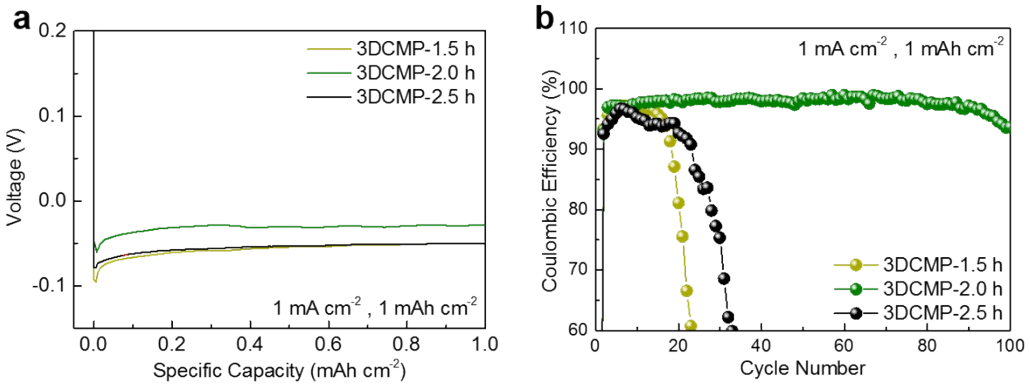

Figure S9. (a) Overpotential and (b) CE of the 3DCMP anodes with differnent thickenesses PANI micro-sheets at 1 mA cm^{-2} with 1 mAh cm^{-2}.

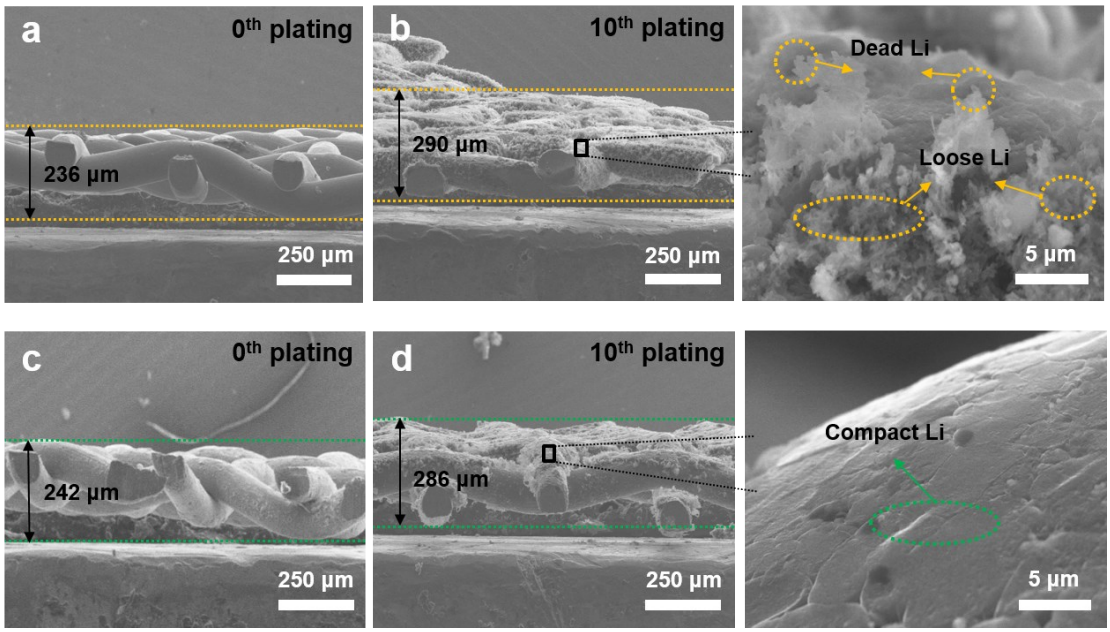

Figure S10. Cross-section view of the (a, b) 3DCM and (c, d) 3DCMP anodes cycled at 1 mA cm^{-2} with 1 mAh cm^{-2} before and after 10 cycles.

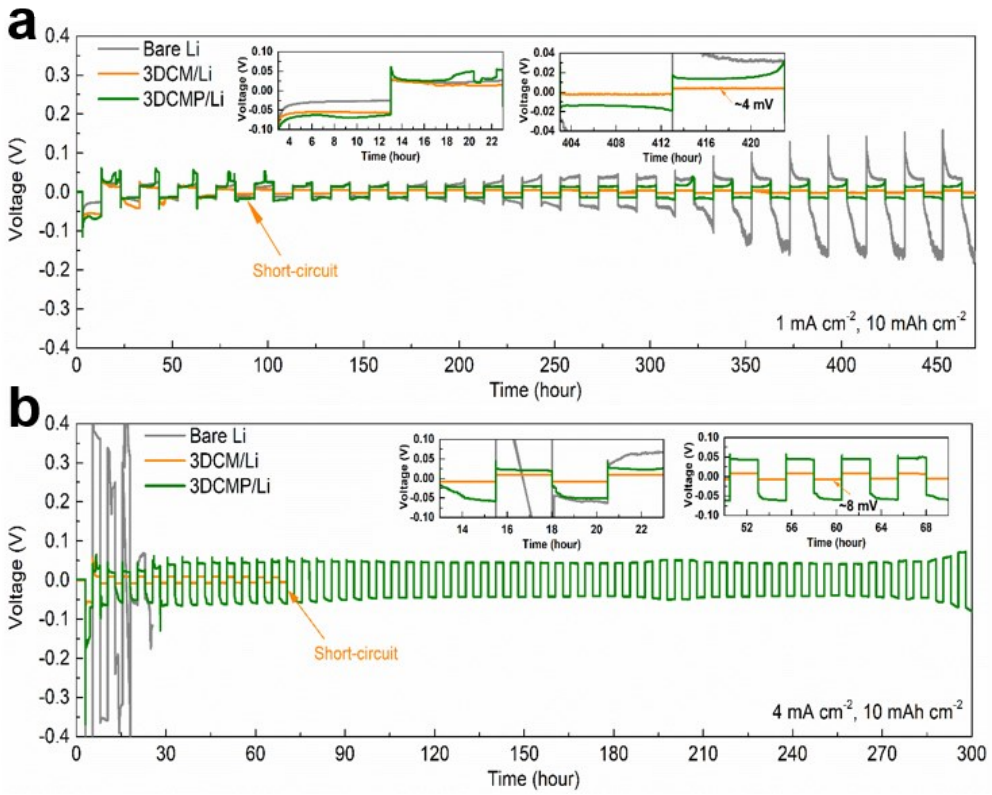

Figure S11. Symmetrical-cell performance of the bare Li, 3DCM/Li and 3DCMP/Li anodes at (a) 1 mA cm^{-2} and (b) 4 mA cm^{-2} with 10 mAh cm^{-2}.

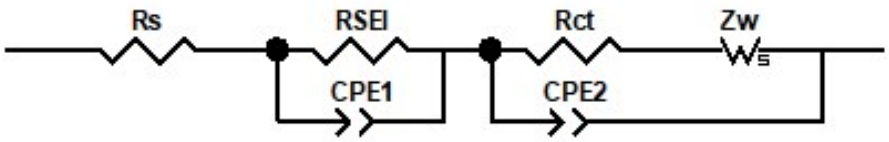

Figure S12. The equivalent circuit schematic of Figure 5 (d-f).

Table S1. The fitted impedance parameters of Figure 5 (d-f).

	Bare Li			**3DCM/Li**			**3DCMP/Li**		
	R_S (Ω)	R_{SEI} (Ω)	R_{ct} (Ω)	R_S (Ω)	R_{SEI} (Ω)	R_{ct} (Ω)	R_S (Ω)	R_{SEI} (Ω)	R_{ct} (Ω)
0th cycle	2.80	3.82	48.21	2.81	21.77	26.89	4.01	5.74	3.78
1st cycle	2.78	2.62	29.88	2.92	17.30	12.50	3.82	5.94	4.86