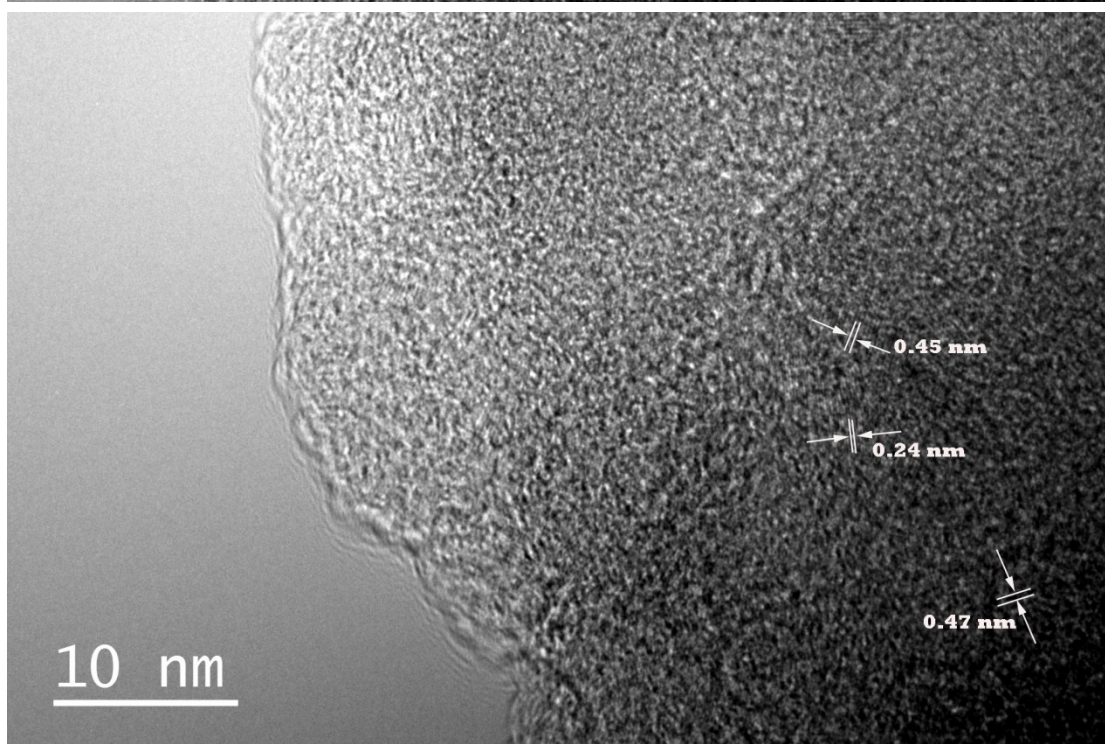
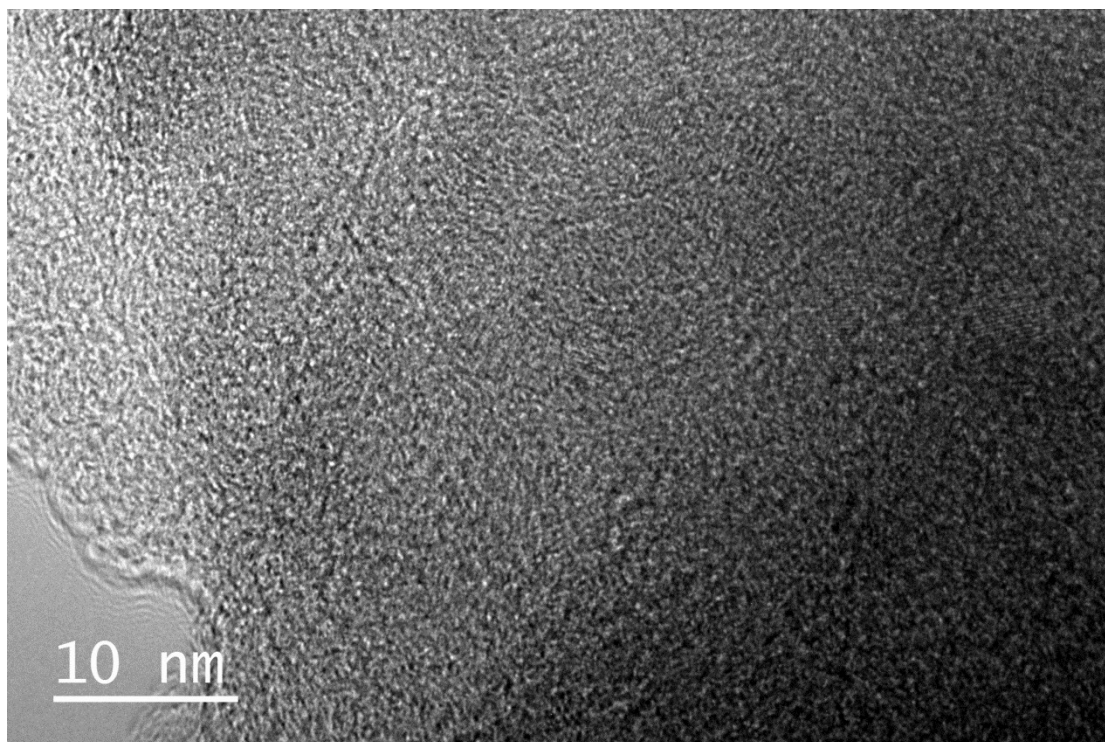
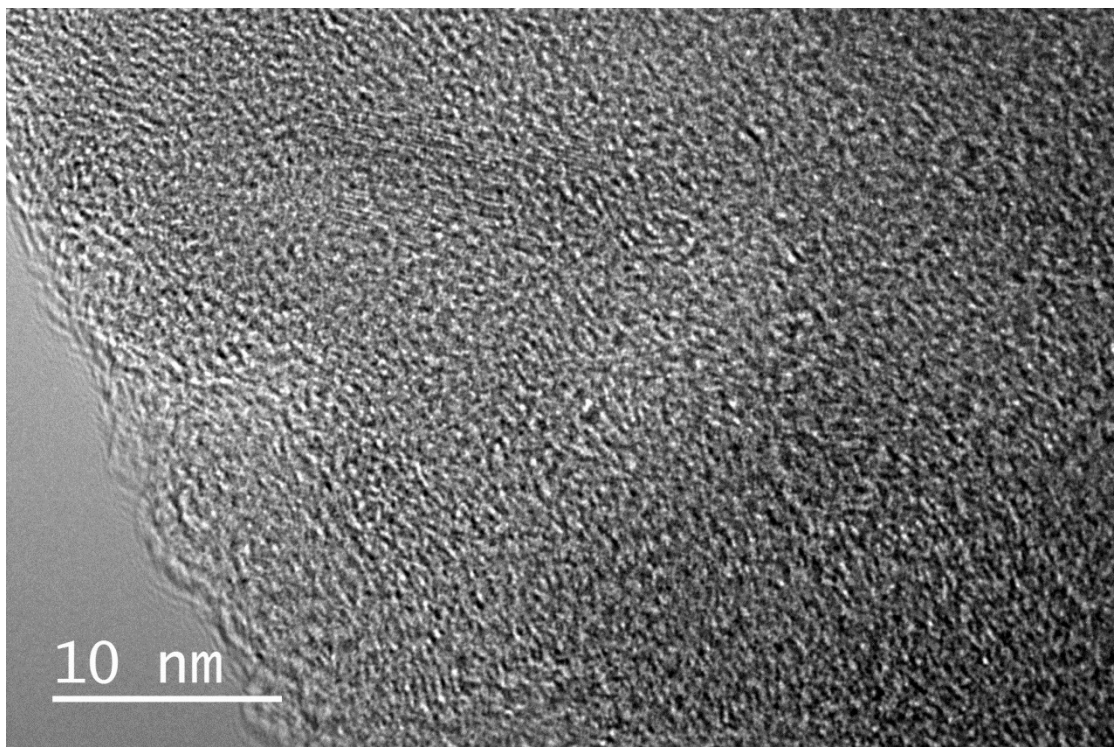
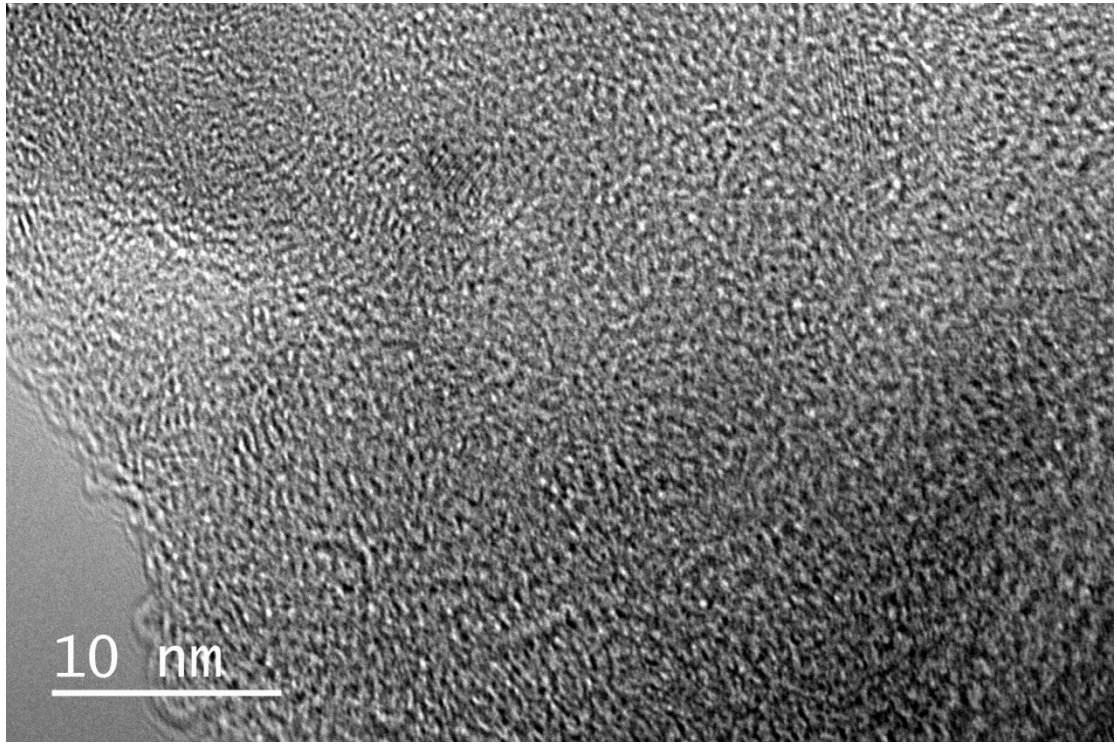
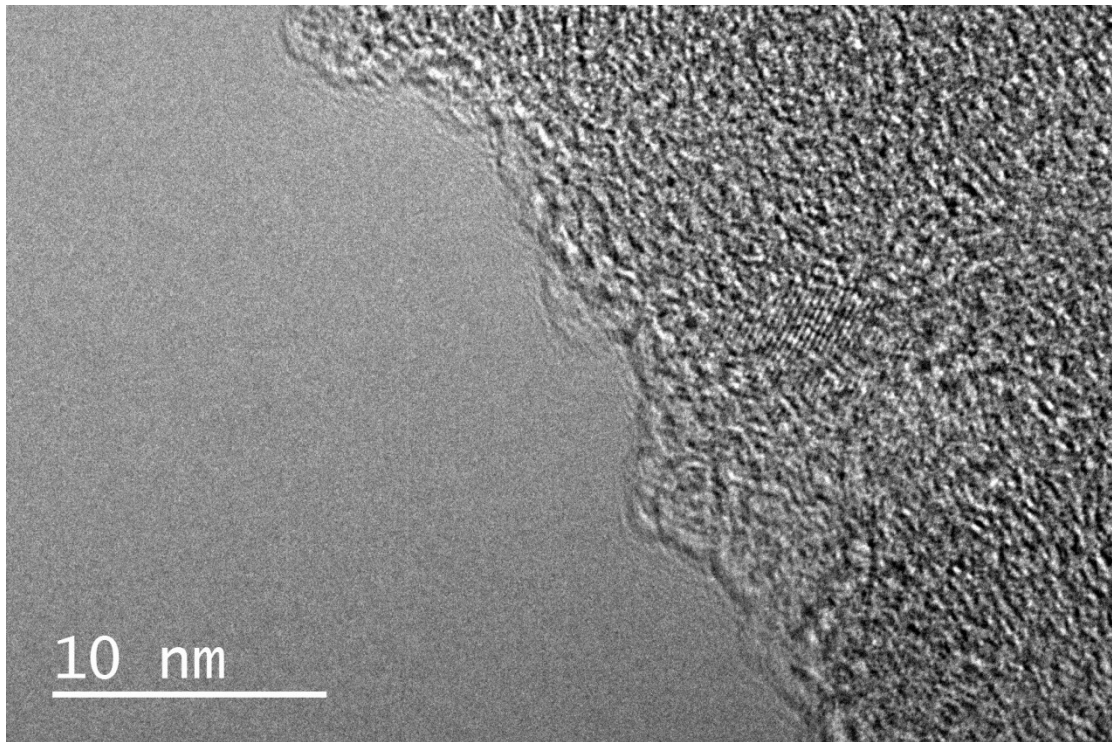


## Supporting Information

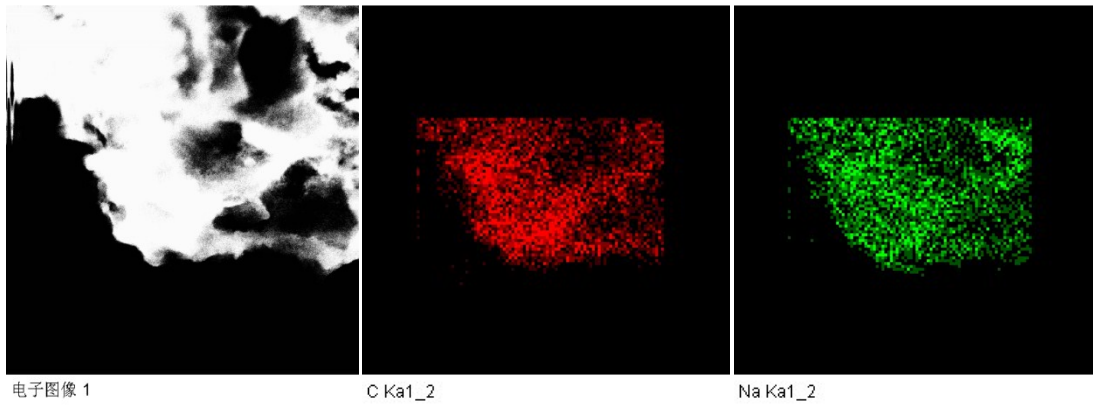
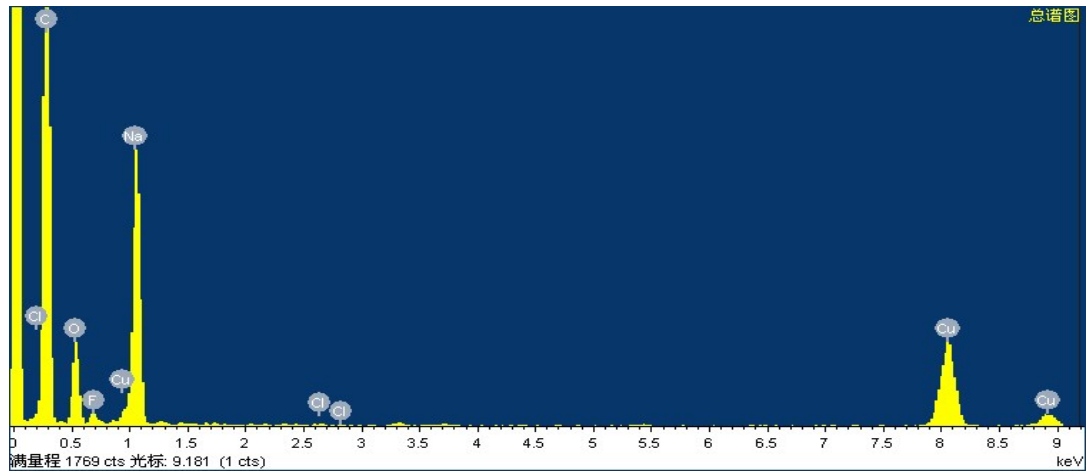






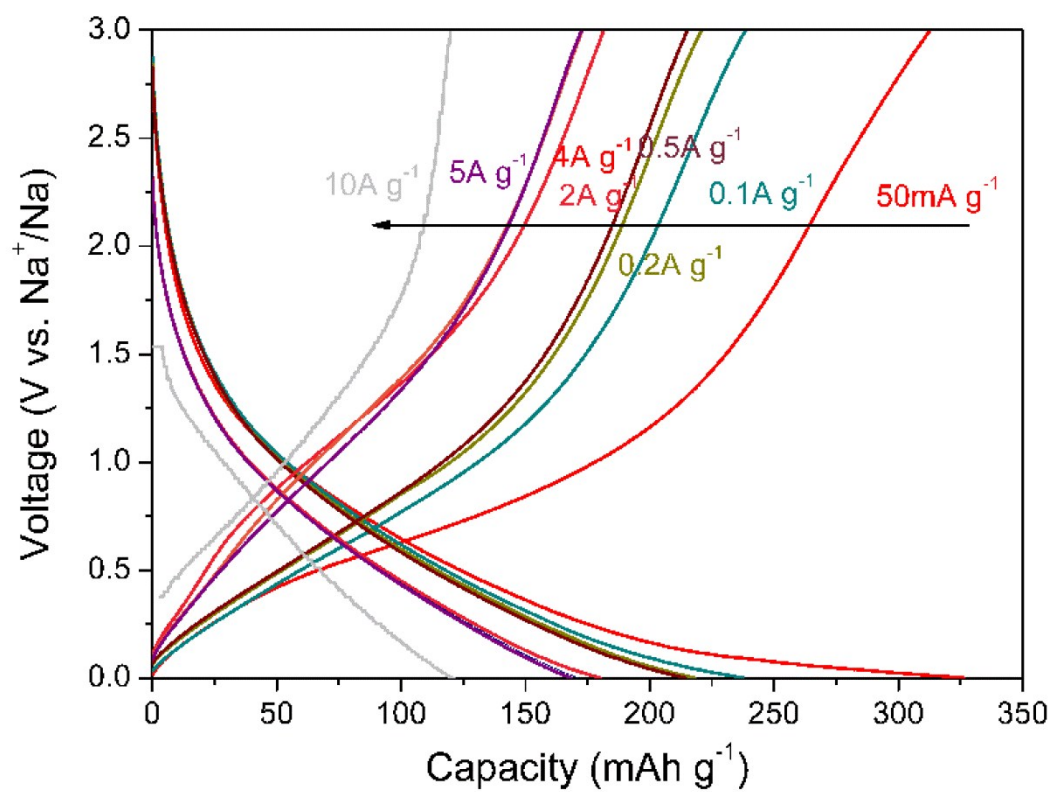
**Figure S1** HRTEM images for the electrode after 100th charge.

Trace amounts of element chlorine can be detected on the surface of 100th-cycled electrode; even the cycled electrode was carefully washed. The detailed data see the EDS of the cycled electrode (Figure S2). The atom percent of element chlorine is only 0.59% on the surface of the 100th cycled electrode, revealing that the element chlorine from electrolyte has little contribution in the SEI film formation of the electrode. The SEI film of the electrode may be composed of non-Cl inorganic sodium salt (inside) and organic sodium salt (outside) as well as lithium-ion battery SEI film.



Element	Peak Area	Area Sigma	K Fact	Abs	Mass Percent (MP)	MP Sigma	Atom Percent
F K	208	31	1.752	1	6.61	0.94	7.92
Na k	4271	108	1.191	1	92.47	1.00	91.49
<b>Cl K</b>	<b>51</b>	<b>21</b>	<b>0.983</b>	<b>1</b>	<b>0.91</b>	<b>0.38</b>	<b>0.59</b>
Total					100		100

**Figure S2** Elemental mapping images, EDS and related element distribution data of the electrode after 100th charge.



**Figure S3** The charge-discharge curves at 50 mA g<sup>-1</sup>, 0.1, 0.2, 0.5, 2, 4, 5, and 10 A g<sup>-1</sup>, respectively.