Supporting Information

Engineering *In Situ*: N-Doped Porous Carbon-Confined FeF_3 for Efficient Lithium Storage

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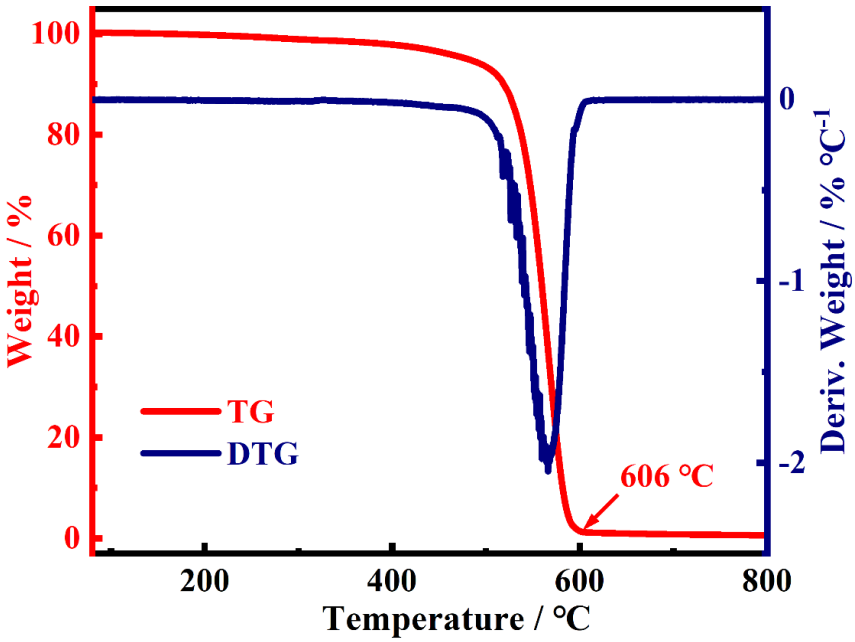

Fig. S1 TG curve of PTFE in N_2 atmosphere.

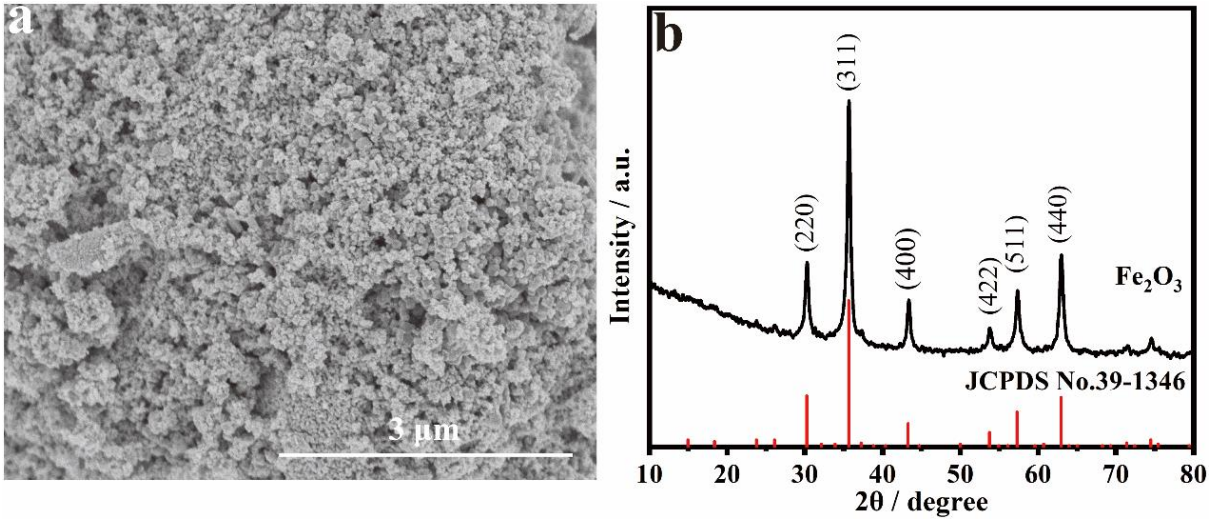

Fig. S2 (a) SEM image of Fe_2O_3; (b) XRD curves of Fe_2O_3.

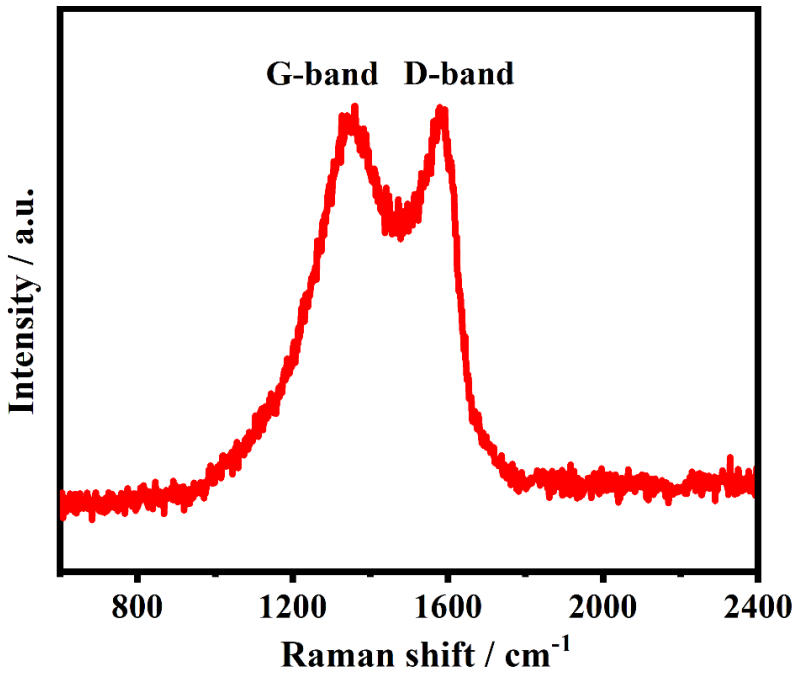

Fig. S3 Raman spectrum of FeF_3@NPC.

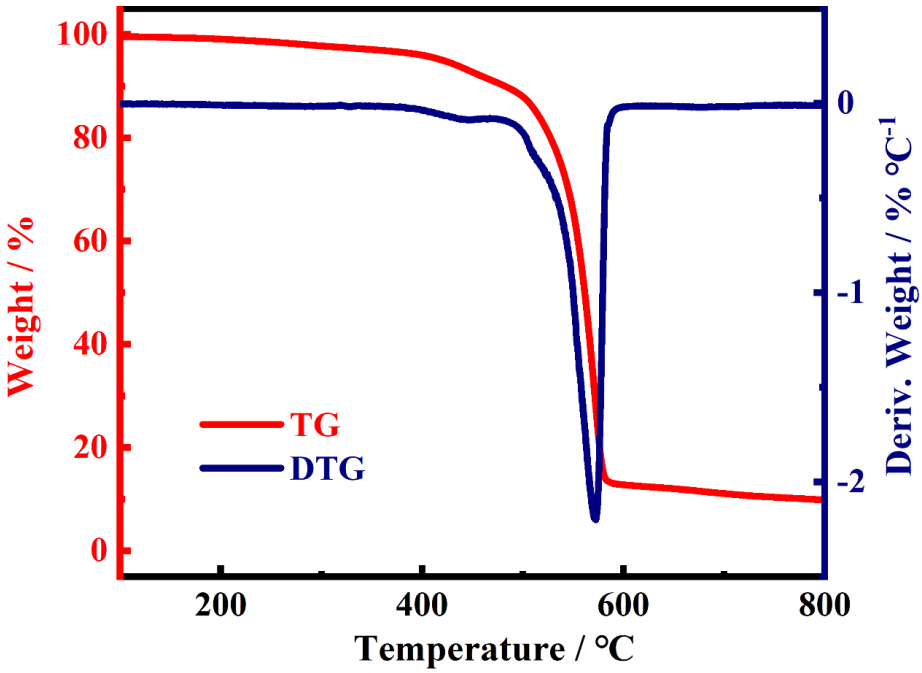

Fig. S4 TG curve of PTFE and Fe_2O_3@SOP mixture.

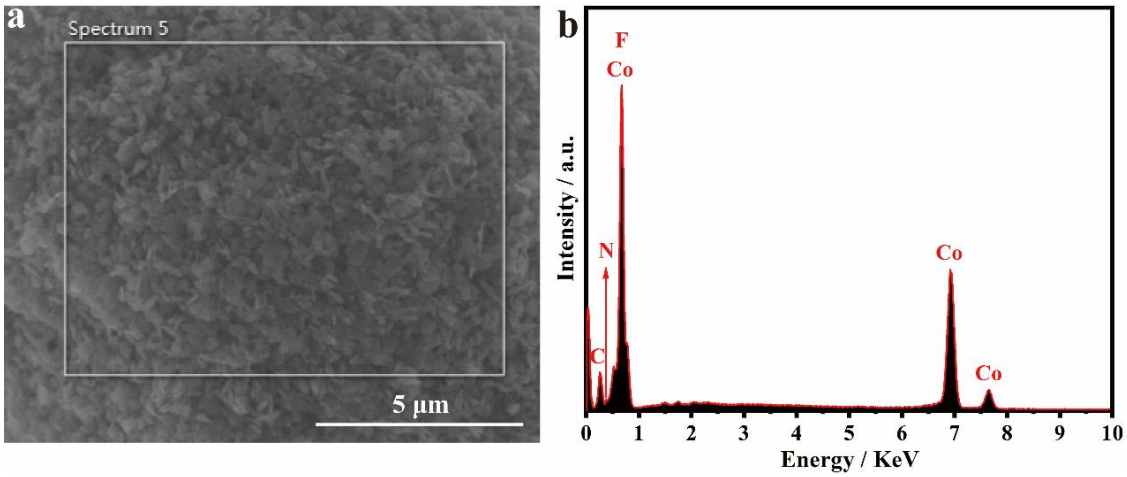

Fig. S5 (a) SEM image and (b) EDS spectrum of CoF_2@NPC**.**

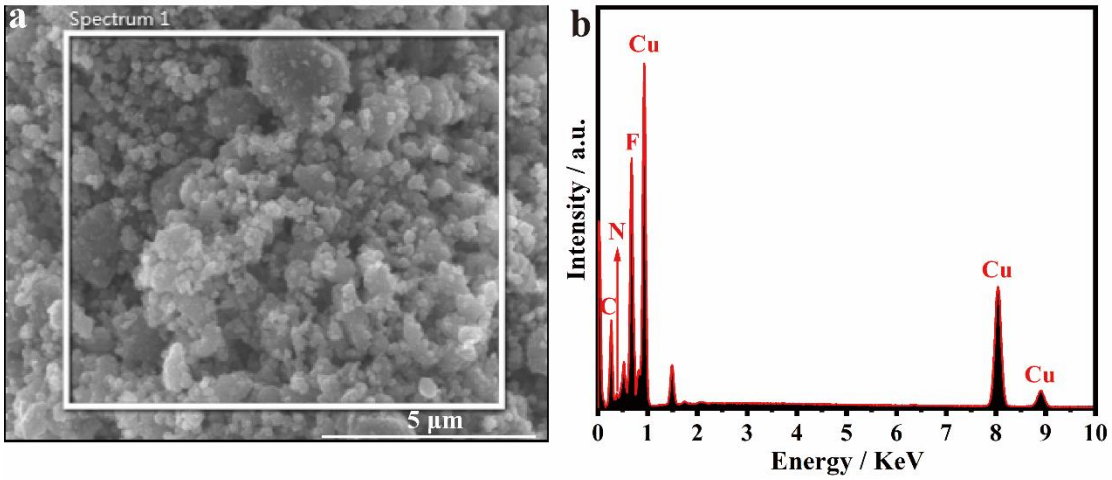

Fig. S6 (a) SEM image and (b) EDS spectrum of CuF_2@NPC**.**

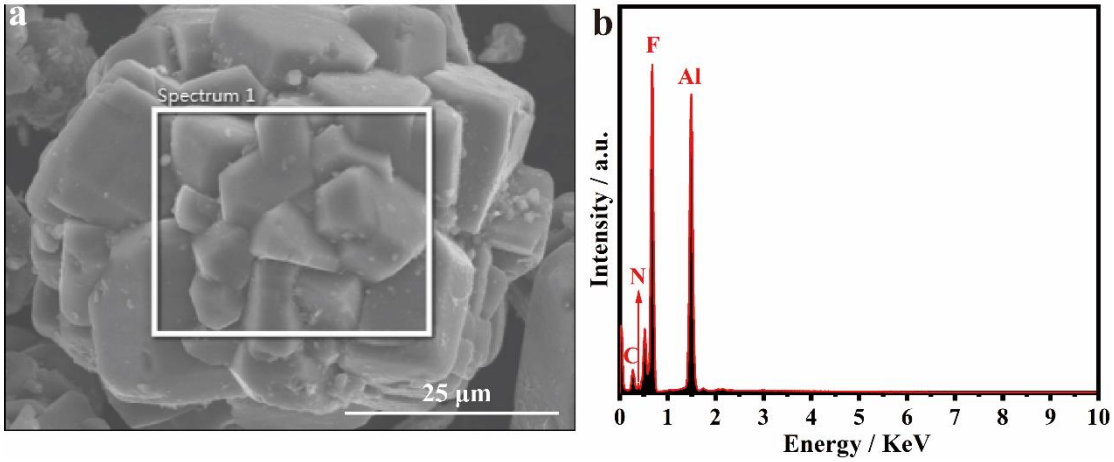

Fig. S7 (a) SEM image and (b) EDS spectrum of AlF_3@NPC**.**

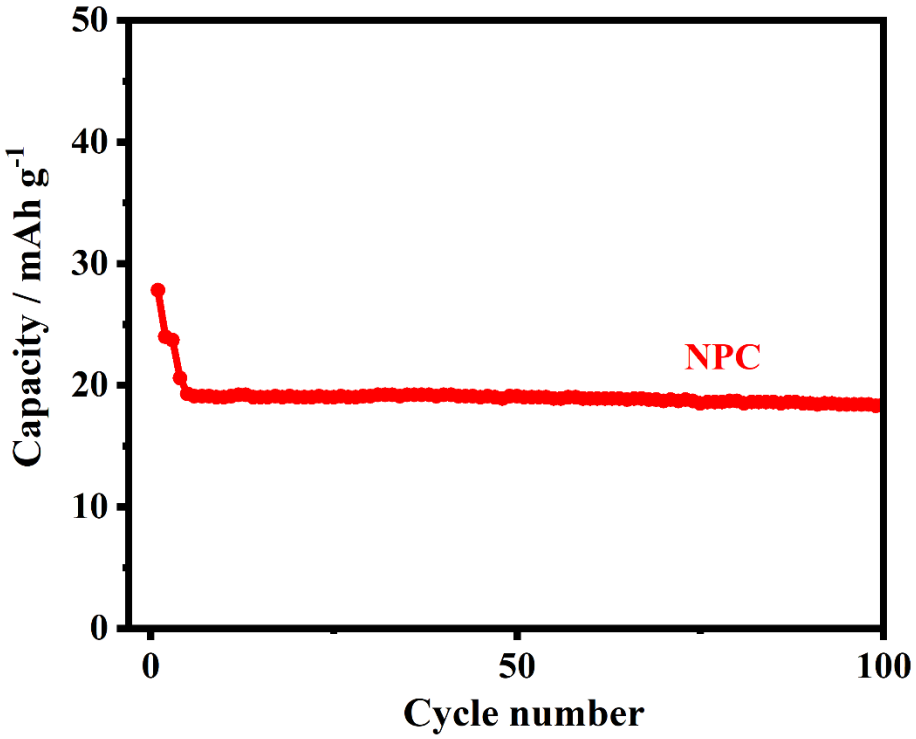

Fig. S8 Cycling performance of NPC at 0.2 C (NPC was obtained by removing FeF_3 with hydrochloric acid).

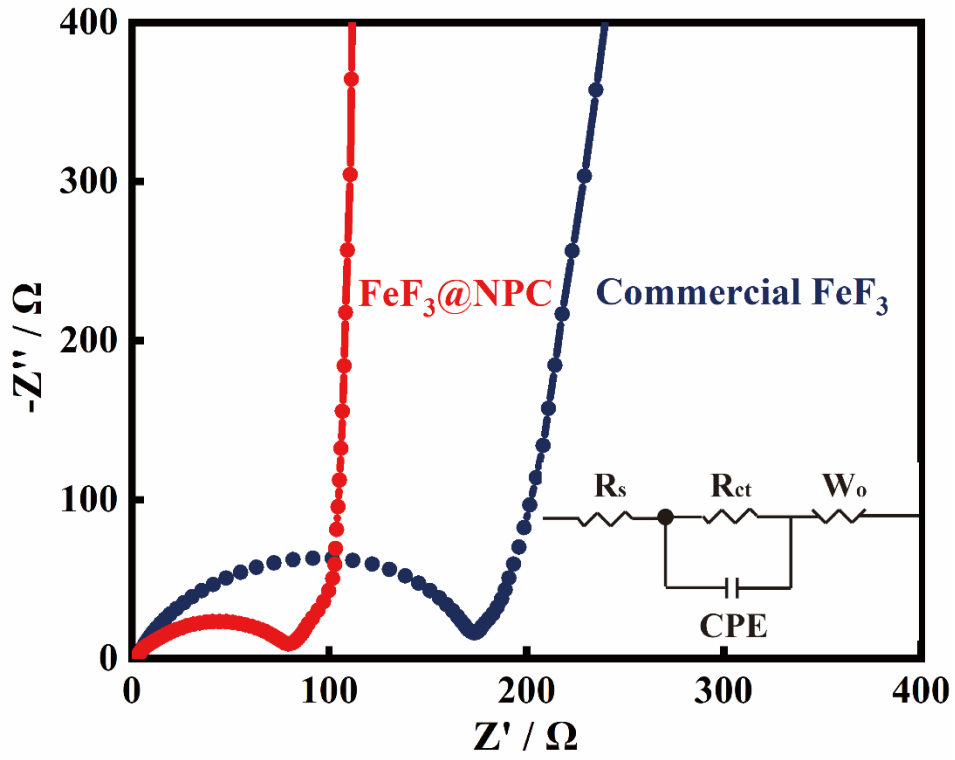

Fig. S9 EIS curves of FeF_3@NPC and commercial FeF_3 before cycling with the equivalent circuit as the inset. R_s: electrolyte resistance; R_{ct}: charge-transfer resistance; W_o: Warburg diffusion element.

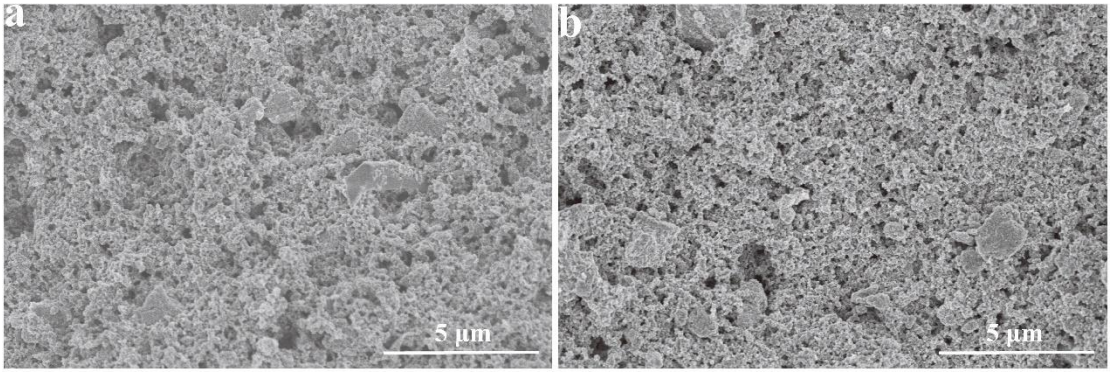

Fig. S10 (a,b) SEM images of the FeF_3@NPC cathode before and after 100^{th} cycles.

Table S1. Comparison of representative FeF_3 cathode materials.

Sample	Current density ($mA\ g^{-1}$)	Initial capacity ($mAh\ g^{-1}$)	Reversible capacity ($mAh\ g^{-1}$)	Voltage region (V)	Ref.
FeF_3@NPC	46.8	249	203 (100^{th})	2.0-4.5	This work
FeF_3/C	23.7	188	166 (50^{th})	2.0-4.5	[1]
FeF_3/r-GO	23.7	205	168 (50^{th})	2.0-4.5	[2]
FeF_3/Fe/GC	120	302.1	215.4 (150^{th})	2.0-4.5	[3]
p-FeF3@C	23.4	248.1	230 (10^{th})	2.0-4.5	[4]
FeF_3/ACF	23.7	221 (4^{th})	199 (50^{th})	2.0-4.5	[5]
$FeF_3 \cdot 0.33H_2O$/Ag/SP	23.7	168.2	128.4 (50^{th})	2.0-4.5	[6]
FeF_3/C	20	166.4	126.3 (100^{th})	2.0-4.5	[7]

References:

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