Supplementary Materials

Table S1. The various BET surface area data of N-doped carbon materials for LIBs.

Electrode	BET Surface Area ($m^2 g^{-1}$)	Reference
Graphene/N-doped carbon	327	[1]
N-doped carbon nanofiber	34.5	[2]
N-doped carbon nanofiber aerogels	696	[3]
N-doped graphene sheet	398	[4]
Porous N-doped carbon	85	[5]
HSNC	437.96	This work

Table S2. The various cycling performance of N-doped carbon materials for LIBs.

Electrode	Voltage Range (V)	Current Density ($mA g^{-1}$)	Reversible Capacity ($mAh g^{-1}$)	Cycle Number	Ref.
Graphene/N-doped carbon	0.003–3.0	100	669	200	[1]
N-doped carbon nanofiber	0.01–3	100	411.9	160	[2]
N-doped carbon nanofiber aerogels	0.01–3	1000	611	1000	[3]
N-doped graphene sheet	0.05–3	100	1050.4	190	[4]
Porous N-doped carbon	0.01–1.5	500	476.7	700	[5]
N-doped 3D porous carbon	0.001–3	200	555	100	[6]
N-doped carbon aerogels	0.01–3.0	100	550	300	[7]
N-doped graphene-carbon nanofiber	0.001–3.0	200	226	150	[8]
N-rich porous carbon	0.01–3.0	100	1181	100	[9]
HSNC	0.01–3.0	200 1000	1398.3 455.7	100 200	This work

Table S3. The fitting parameters for EIS spectra of NC and HSNC samples in LIBs. (The resistance of electrolyte (R_s), resistance of SEI layers (R_f), charge transfer resistance (R_{ct}), Warburg resistance (W_o), capacitance on the surface layer (C), and double-layer capacitance (Q) at the interface between the electrode and electrolytes).

Circuit Elements	OCV	
	NC	HSNC
R_s (Ω)	2.22×10^{-16}	2.22×10^{-16}
CPE_b (F)	0.5	0.89
R_{ct} (Ω)	505.81	115.54
CPE_{dl} (F)	0.71	0.34
R_b (Ω)	4629	4034
W_o (Ω)	0.008	0.006

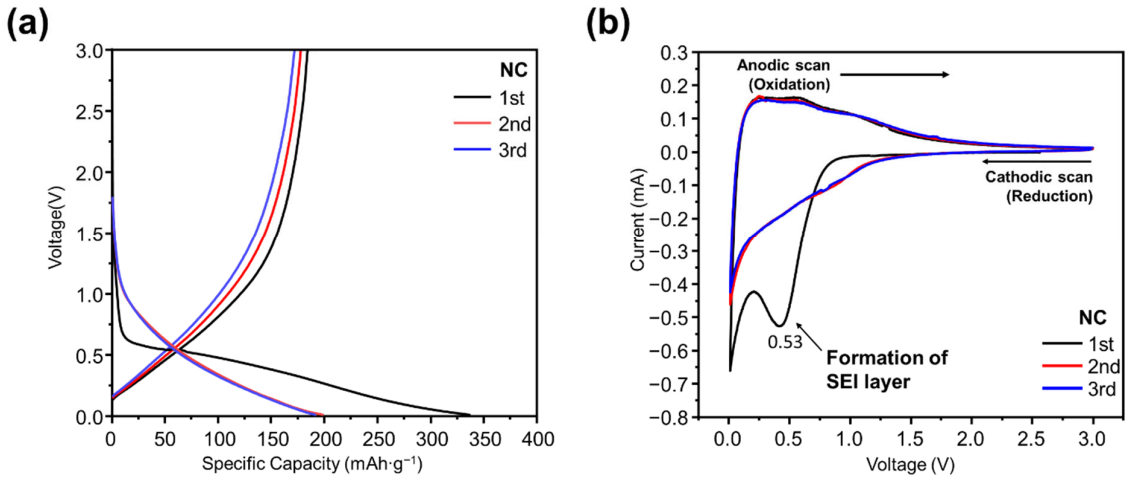

Figure S1. (**a**) Discharge–charge voltage profiles of the first three cycles at 0.2 Ag^{-1} and (**b**) CV curve at a scan rate of 0.1 mVs^{-1} from NC sample in the voltage range of 0.01–3.0 V.

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