Supporting Information

Porous nitrogen-doped carbon tubes derived from reed catkins as high-performance anode for lithium ion batteries

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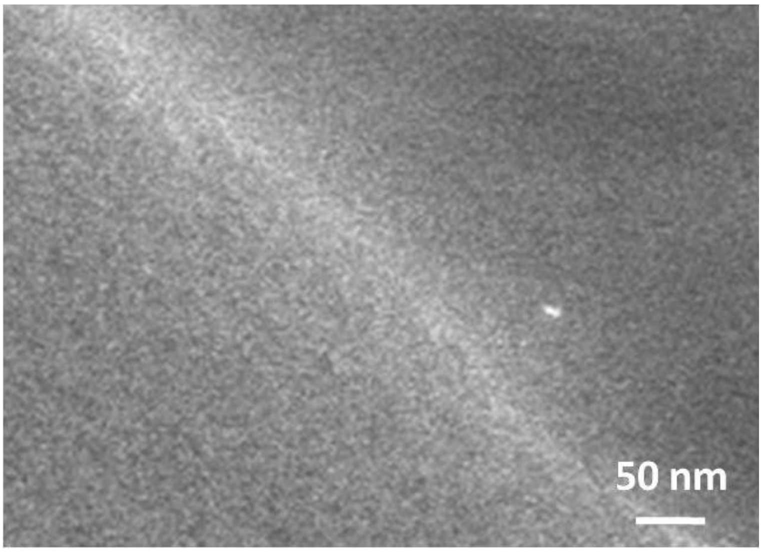

Fig. S1 High-resolution SEM image of PNCTs.

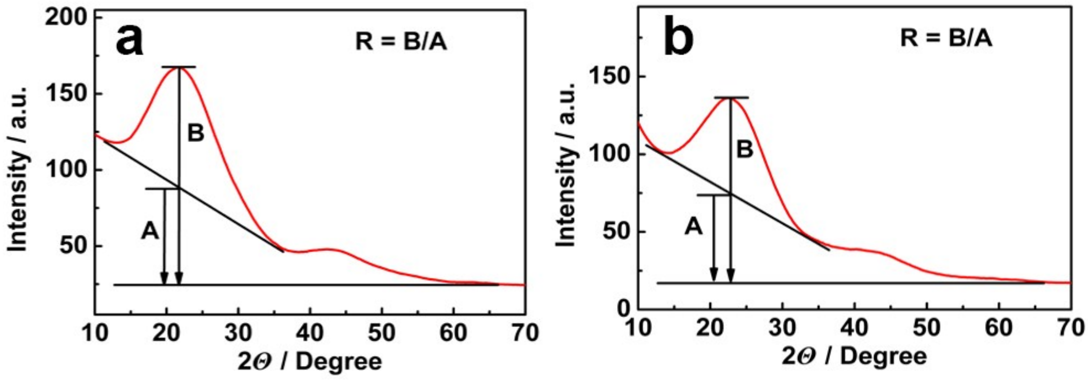

Fig. S2 Scheme illustrating the R values calculation based on XRD patterns for NCTs (a) and PNCTs (b).

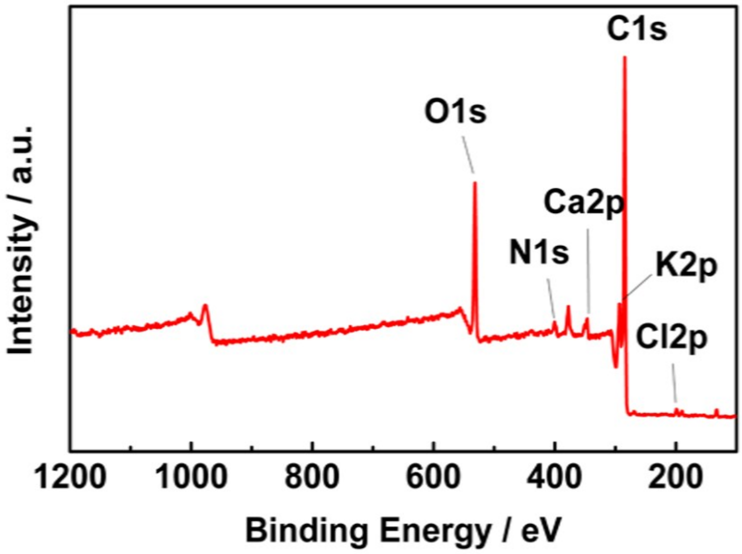

Fig. S3 The total XPS spectrum.

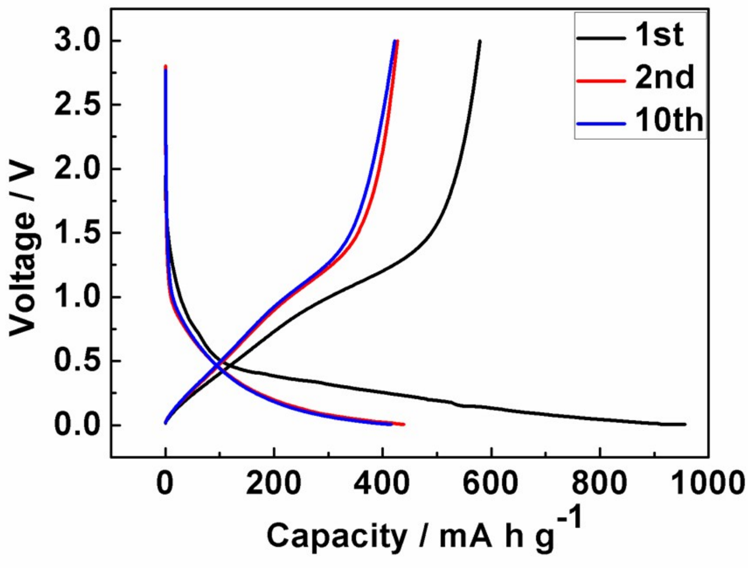

Fig. S4 Charge-discharge curves of NCTs at 0.1 A g^{-1}.

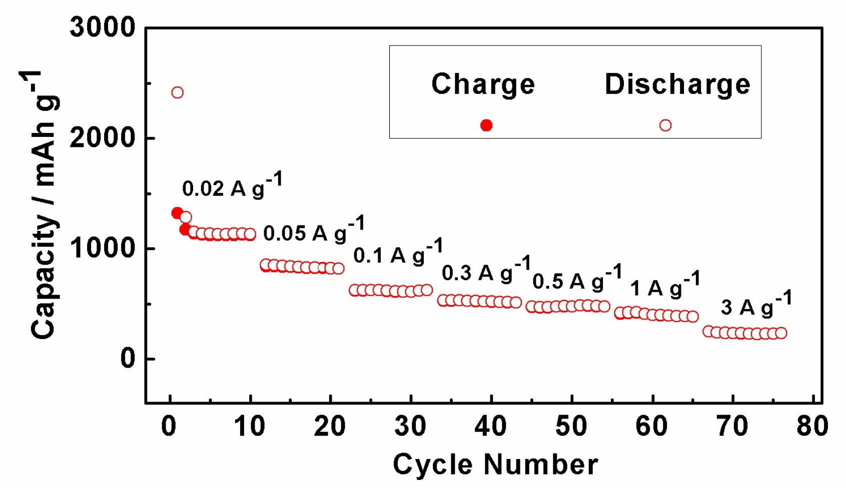

Fig. S5 Charge-discharge capacity versus cycle number of freshly obtained PNCTs at different rates.

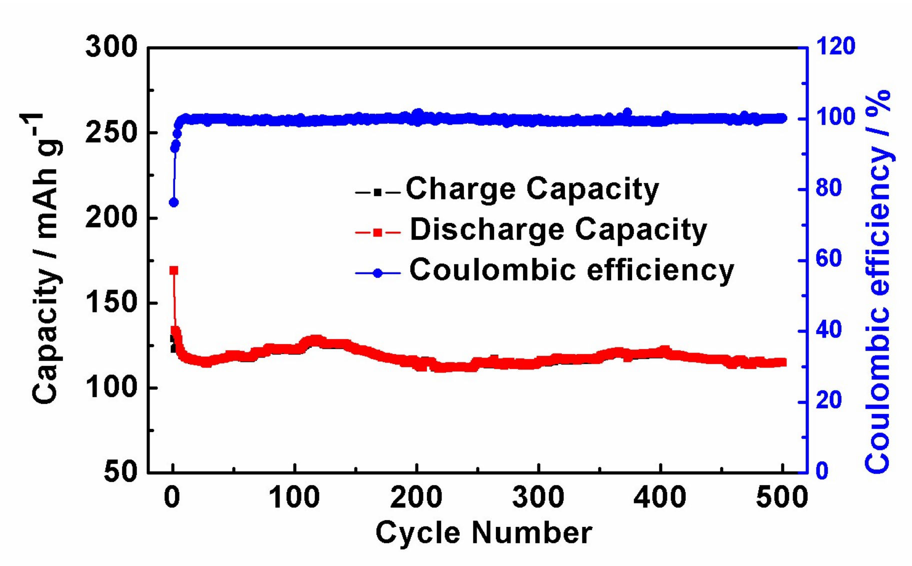

Fig. S6 Cycling performance and corresponding Coulombic efficiency of NCTs at a current density of 1 A g^{-1}.

Table S1. Reversible capacities and rate capabilities of carbons derived from biomass and other precursors as LIB anodes reported recently.

Sample	Carbon precursor	Reversible capacity/ mAh g^{-1}	Rate capability/ mAh g^{-1}	Ref.
Banana peel pseudographite (BPPG)	Banana peel	1184 of 2nd cycle at 50 mA g^{-1} and 790 of 11th cycle at 100 mA g^{-1}	243 at 5 A g^{-1}	S1
Ramie fiber carbon (RFC)	ramie fibers	407 of 1st cycle and 385 of 10th cycle at 100 mA g^{-1}	204 at 0.5 A g^{-1}	S2
Corncob carbon (CC)	corncobs	415 of 1st cycle and 359 of 10th cycle at 100 mA g^{-1}	251 at 0.5 A g^{-1}	S2
Peanut shells derived porous hard carbons (PSDHCs)	Peanut shells	stable capacity of 1230 at 50 mA g^{-1}	310 at 5 A g^{-1}	S3
N-doped garlic peel carbon (N-doped GPC)	Garlic peel	754 of 1st cycle at 50 mA g^{-1}	215 at 4 A g^{-1}	S4
Carbonaceous photonic crystals (CPCs)	Butterfly wings	590 of 10th cycle at 50 mA g^{-1}	113 at 5 A g^{-1}	S5
Hierarchically porous nitrogen-rich carbon (HPNC)	Wheat straw	1470 of 1st cycle and 1327 of 50th at 37 mA g^{-1}	566 at 7.4 A g^{-1}	S6
Ox horn derived carbon (OHC)	Ox horn	1231 of 2nd cycle and 1181 of 10th cycle at 100 mA g^{-1}	304 at 5 A g^{-1}	S7
Hierarchical porous nitrogen-doped carbon-nanosheets (HPNC-NSs)	Silk	1913 of 1st cycle and stable capacity of 1865 at 100 mA g^{-1}	523 at 5 A g^{-1}	S8
Micro-sized porous carbon spheres (PCSs)	Corn starch	519 of 1st cycle and 507 of 100th cycle at 100 mA g^{-1}	245 at 5 A g^{-1}	S9
Porous carbon nanofibers/nanosheets hybrid (CNFS)	Cornstalk	stable capacity of 578 at 100 mA g^{-1}	454 at 3 A g^{-1}	S10
Interconnected highly graphitic carbon nanosheets (HGCNS)	Wheat stalk	502 of 1st cycle and 443.7 of 50th cycle at 37.2 mA g^{-1}	161.4 at 3.72 A g^{-1}	S11
Cotton derived porous carbon	Cotton cellulose	1052.76 of 1st cycle and 793 of 500th cycle at 500 mA g^{-1}	355 at 4 A g^{-1}	S12
Porous carbons derived from microalgae	Microalgae	445 of 1st cycle and 433 of 100th cycle at 37.5 mA g^{-1}	355 at 1 A g^{-1}	S13
Porous carbon material (ACSB)	Shells of broad beans	845.2 of 1st cycle at 186 mA g^{-1}	261.5 at 0.372 A g^{-1}	S14

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Table S2. Reversible capacities and rate capabilities of carbons derived from other precursors as LIB anodes reported recently.

Sample	Carbon precursor	Reversible capacity/ mAh g^{-1}	Rate capability/ mAh g^{-1}	Ref.
Hierarchical porous carbon microspheres (HPCM)	Phenolic formaldehyde resin	stable capacity of 585 mA h g^{-1} at 50 mA g^{-1}	200 at 1 A g^{-1}	S15
Amorphous nitrogen-doped carbon nanosheets	$C_{10}H_{12}N_2O_8M$-n $Na_2 \cdot 2H_2O$	699.2 of 1st cycle at 100 mA g^{-1}	130.1 at 10 A g^{-1}	S16
Carbon nanocages supported by ultrathin carbon nanosheets (CNCs@CNSs)	1-hexadecylam-ine	823.4 of 1st cycle at 186 mA g^{-1}	320 at 3.72 A g^{-1}	S17
Nanoporous hard carbon microspheres (NHCSs)	Phenolic resin	357 of 1st cycle at 100 mA g^{-1}	~80 at 3.72 A g^{-1}	S18
Hollow graphite fibers (HGFs)	Isotropic pitch	stable capacity of 385.5 at 50 mA g^{-1}	177.4 at 1 A g^{-1}	S19
Boron and nitrogen co-doped porous carbon Nanotubes (BN-PCNTs)	Polypyrrole (PPy)	1261 of 1st cycle at 200 mA g^{-1}	282 at 2 A g^{-1}	S20
Nitrogen-doped mesoporous carbon hollow spheres (N-MCHSs)	Dopamine	1100.6 of 1st cycle at 500 mA g^{-1}	214 at 4 A g^{-1}	S21
Nitrogen-enriched porous carbon nanofiber networks (NPCNFs)	Melamine and polyacrylonitri-le	1323 of 1st cycle at 50 mA g^{-1}	473 at 1 A g^{-1}	S22
Nitrogen-containing carbon (N–C) film	Polypyrrole (PPy)	957.8 of 1st cycle at 500 mA g^{-1}	325.9 at 20 A g^{-1}	S23
Carbon nanospheres (CNSs)	Natural gas	552 of 1st cycle at 50 mA g^{-1}	106 at 5 A g^{-1}	S24
PVP-derived carbon nanofibers (PVP-CNF)	Polyvinylpyrro-lidone (PVP)	1025.7 of 1st cycle at 100 mA g^{-1}	1025.7 at 0.25 A g^{-1}	S25
3D free-standing carbon nanotubes (CNTs)	Ethylene	397 of 1st cycle at 37.2 mA g^{-1}	248 at 0.372 A g^{-1}	S26

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