Electronic supplementary materials

Constructing a novel strategy by carbon doped TiO_2 multiple-phase nanocomposites toward the superior electrochemical performance for lithium ion batteries and hydrogen evolution reaction

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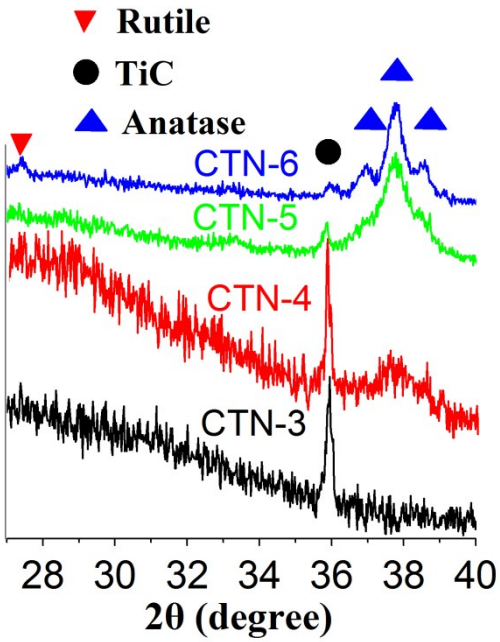

Figure S1 XRD patterns of CTN-3, CTN-4, CTN-5 and CTN-6 between 27 and 40°

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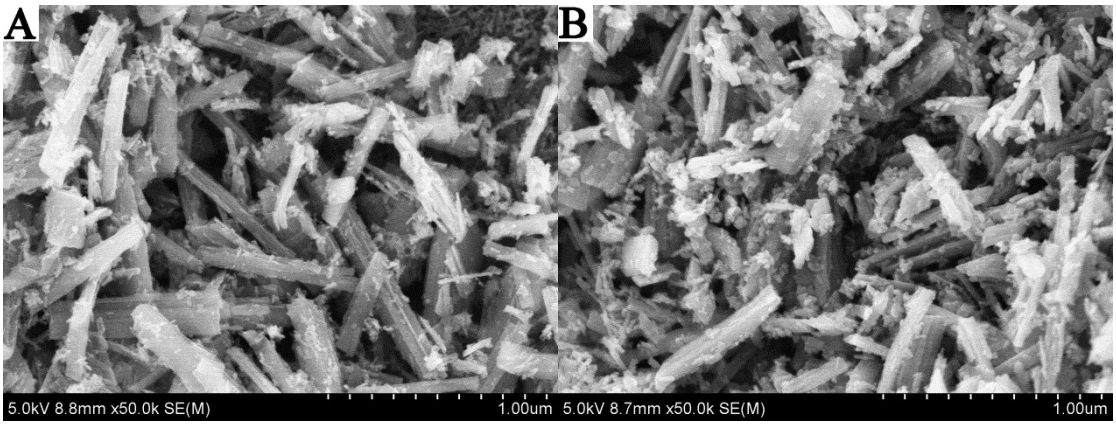

Figure S2 SEM image of CTN-5 (A) and CTN-6 (B)

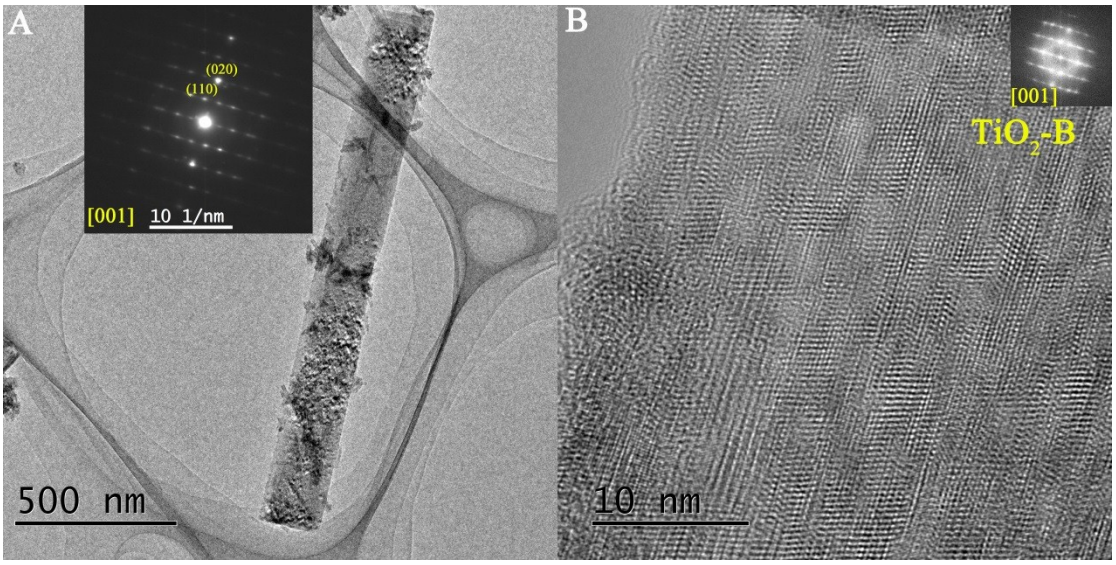

Figure S3. (A) TEM image of CTN-3 (Inset: SAED image of CTN-3) (B) Typical HRTEM image of CTN-3 (Inset: FFT image)

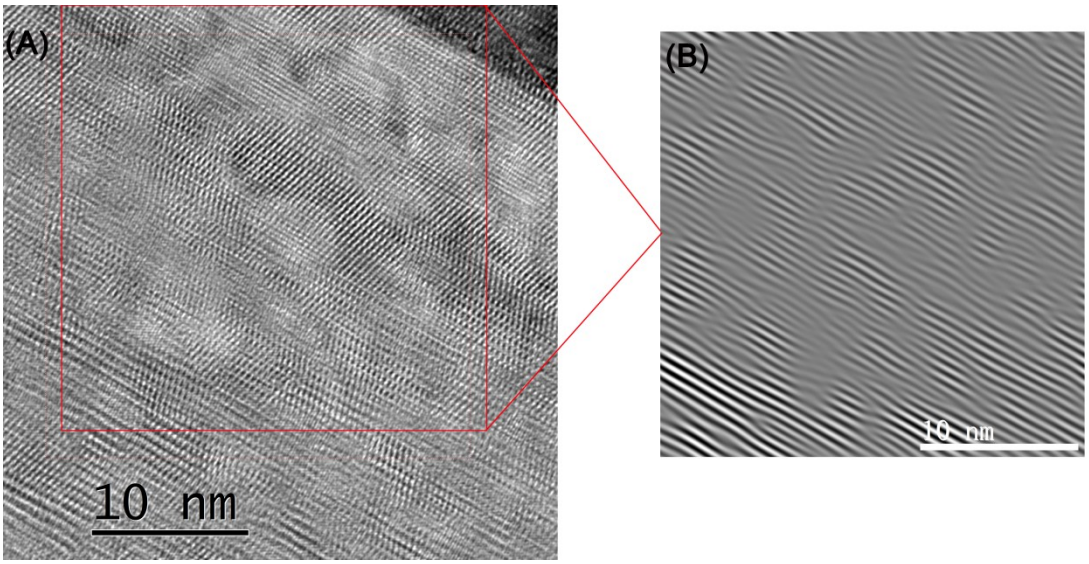

Figure S4. HRTEM image of CTN-4 (A) and Filtered inverse FFT image (B)

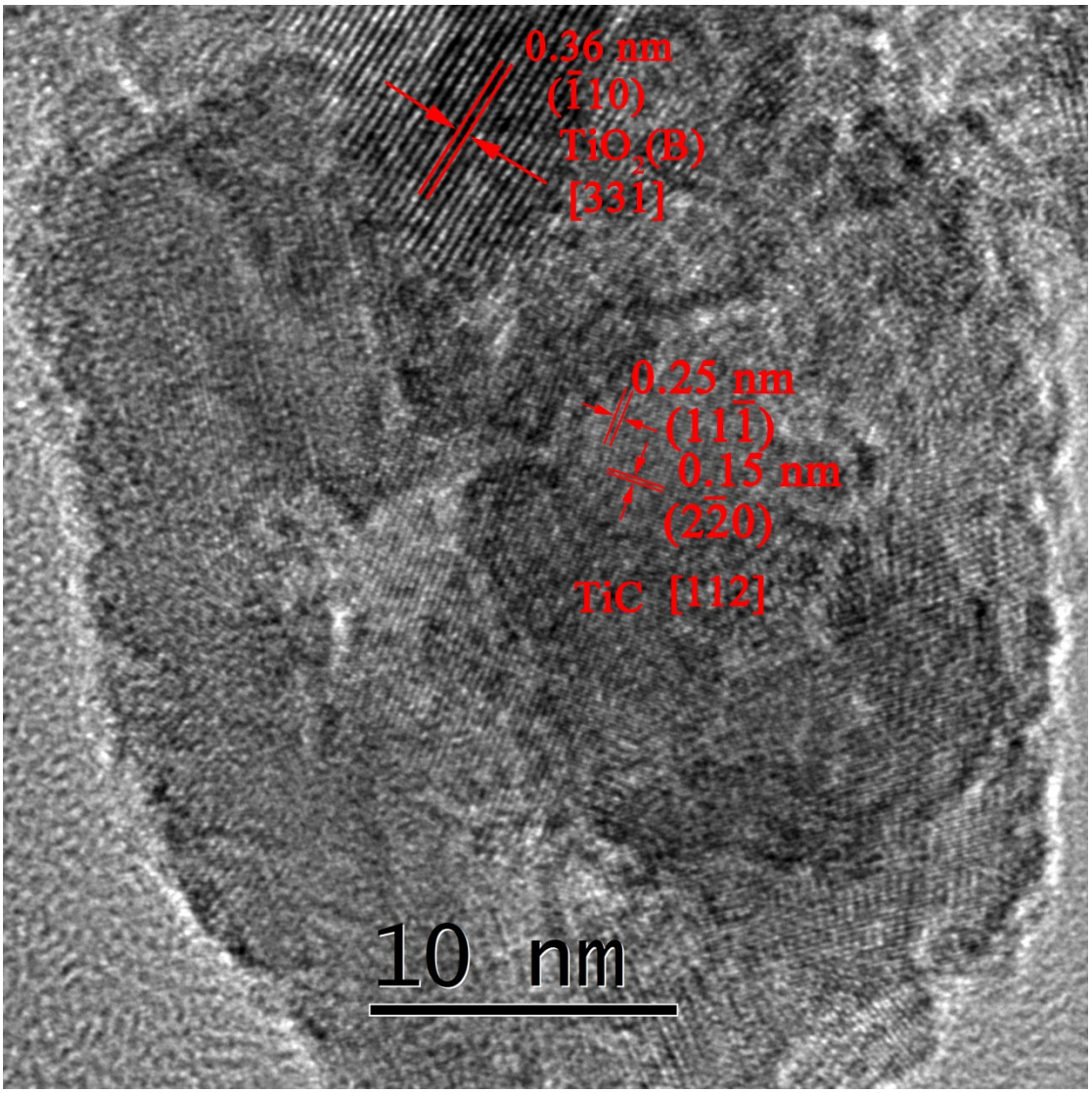

Figure S5. HRTEM of TiC particles

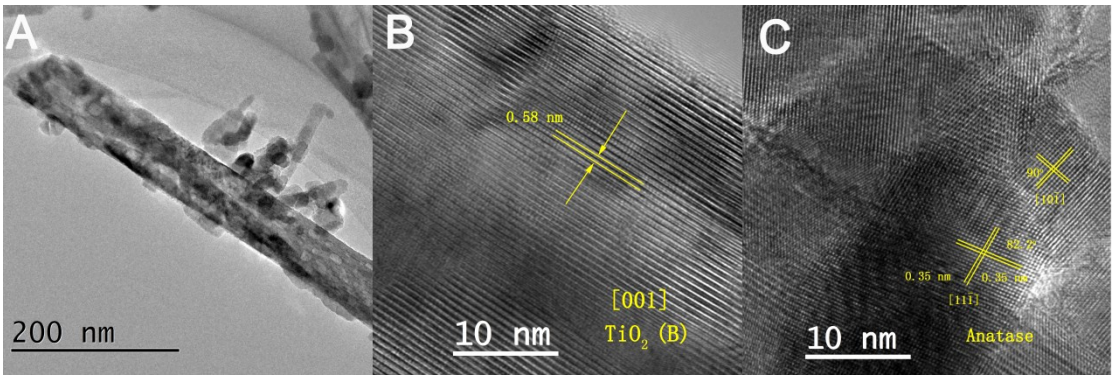

Figure S6. TEM image of CTN-6 (A), HRTEM of CTN-6 nanobelt (B) and HRTEM of nanoparticles on the surface of CTN-6 (C)

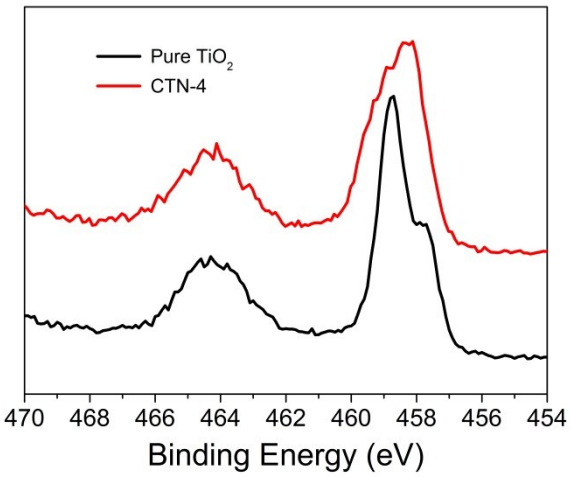

Figure S7. High resolution XPS spectra of pure TiO_2 and CTN-4

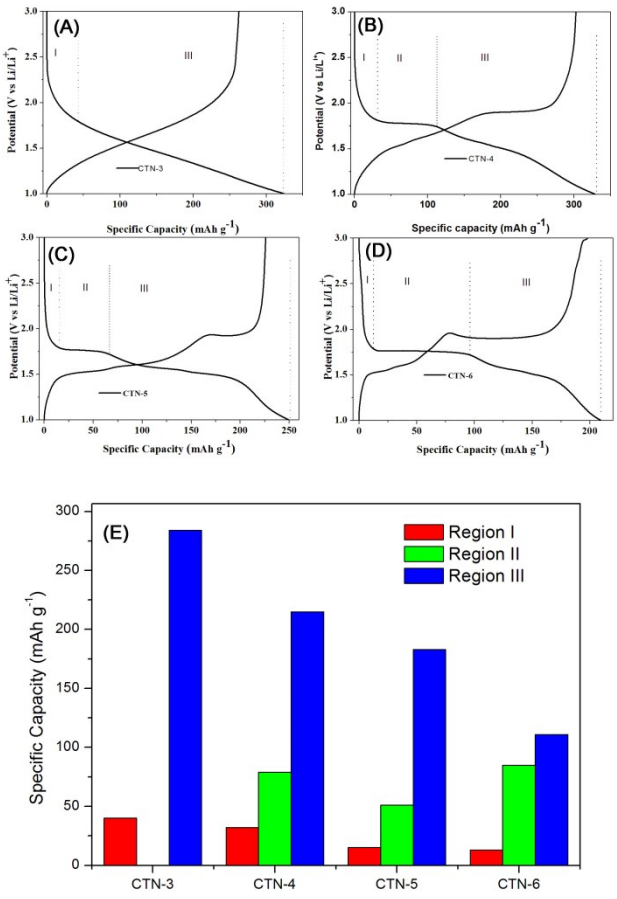

Figure S8. The second Charge-discharge curves of CTN-3 (A), CTN-4 (B), CTN-5(C) and CTN-6; Capacity contribution from different regions in the discharge curves of CTN-3, CTN-4, CTN-5 and CTN-6 (E).

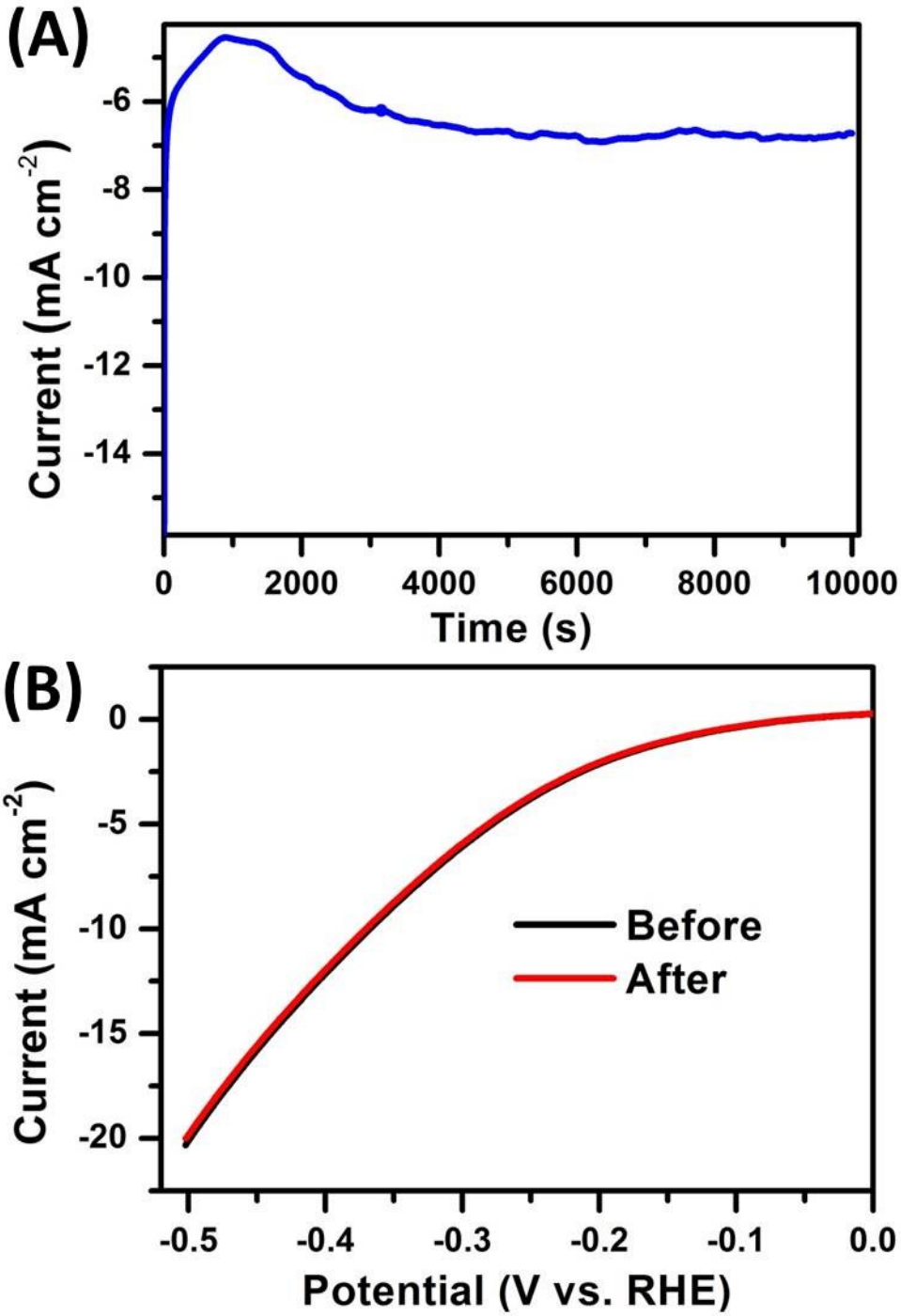

Figure S9. Polarization curves (before and after 3 h stability) of the CTN-4 nanobelt composites

Table S1 The phase components for as prepared sample

Containing phase	**CTN-3**	**CTN-4**	**CTN-5**	**CTN-6**
TiC phase	Yes	Yes	Yes	None
TiO_2 (B) phase	Yes	Yes	Yes	Yes
Anatase phase	None	Yes	Yes	Yes
Rutile phase	None	None	None	Yes (minor)

Table S2 Electrochemical Performance of TiO_2 based materials as anode in LIB

Electrode materials	Voltage Window (V)	Specific capacity (mAh g^{-1})	Reference s
TiO_2(B) nanosheets/EOG foam	1-3	~110 @ 10 A g^{-1}*	[1]
Peapod-like TiO_2/carbon	1-3	132 @ 1.675Ag^{-1}	[2]
TiO_2(B) nanosheets/carbon nanotube	1-3	147 @ 6 A g^{-1}	[3]
TiO_2(B)/anatase TiO_2/graphene	1-3	140 @ 3 A g^{-1}	[4]
mesoporous TiO_2 /graphitic carbon	1-3	145 @ 10.2 A g^{-1}	[5]
TiO_2-Carbon Hybrid Nanostructures	1-3	123 @ 7.2 A g^{-1}	[5]
Carbon-doped TiO_2 (B) nanowire	1-3	172@3.3 Ag^{-1}	[6]
Anatase TiO_2 Nanosheets/TiO_2-B	1-3	110 @ 8.5 A g^{-1}	[7]
CTN-4	1-3	188 @ 5 A g^{-1} 159 @ 10 A g^{-1} 142 @ 15 A g^{-1}	This work

* mass loading 1.7 mg cm^{-2}

References

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