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Titania nanotubes coated with graphene as a promising catalyst for oxygen reduction reaction

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Table S1. Structure Parameter of rGO/TiO_2NTs, TiO_2NTs, rGO and commercial TiO_2 Sample

Sample	BET surface area (m^3 g^{-1})	Pore size (nm)	Pore volume (cm^3 g^{-1})	Micropore volume (cm^3 g^{-1})	Rmicro (%)
rGO/TiO_2NTs	240.71	5.32623	0.320525	0.071169	22.2%
TiO_2NTs	141.39	4.49122	0.15875	0.045129	28.4%
rGO	184.09	5.07889	0.233744	0.023334	10.0%
Commercial TiO_2	78.59	8.36195	0.175061	0.012068	6.9%

Table S2. Comparison of ORR activity of rGO/TiO_2NTs with other Ti doped carbon-based ORR catalysts reported before.

Material	Onset Potential/V	Cathodic ORR peak/V	Morphology	Ref.
(001)-TiO_2-x SC/rGO	0.71 (RHE)	-0.45(SCE)	Truncated bipyramids	Nat.Commun[1]
TiO2/rGO	-0.20 (SCE)	-0.41 (SCE)	Nanoparticles	Int.J. Hydrogen. energ[2]
N-doped TiO_2/npC hybrid	0.76 (RHE)	N.A.	Sphere-like	Acs.Appl.Mater. inter[3]
Co_3O_4(3)/hm-TiO_2	0.7 (RHE)	0.65 (RHE)	Two-dimensional	Catalysts[4]
TiO_2 NT arrays	-0.25 (Ag/AgCl)	-0.4 (Ag/AgCl)	Nanotubes	Appl.Surf.Sci[5]
rGO/TiO_2 NTs	0.8 (RHE)	0.65 (RHE)	Nanotubes	This work
TiO_2NTs	0.69 (RHE)	0.615(RHE)	Nanotubes	This work
rGO	0.68 (RHE)	0.605(RHE)	N.A.	This work

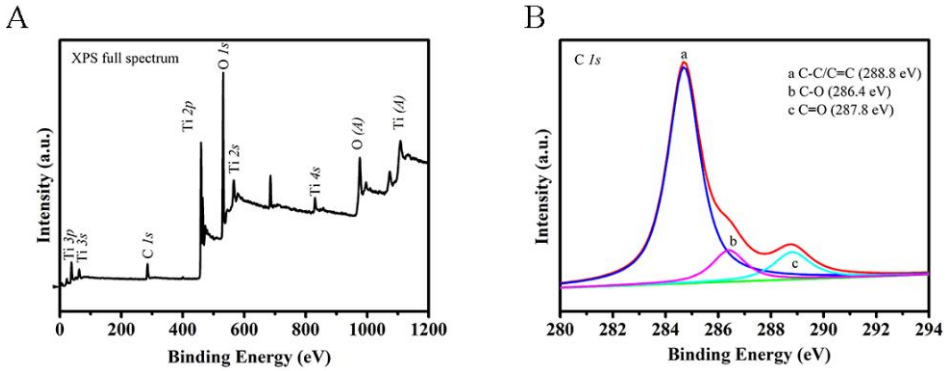

Fig. S1 XPS spectra: Full scan of TiO_2NTs composite (A), C1s spectrum of TiO_2NTs composite (B)

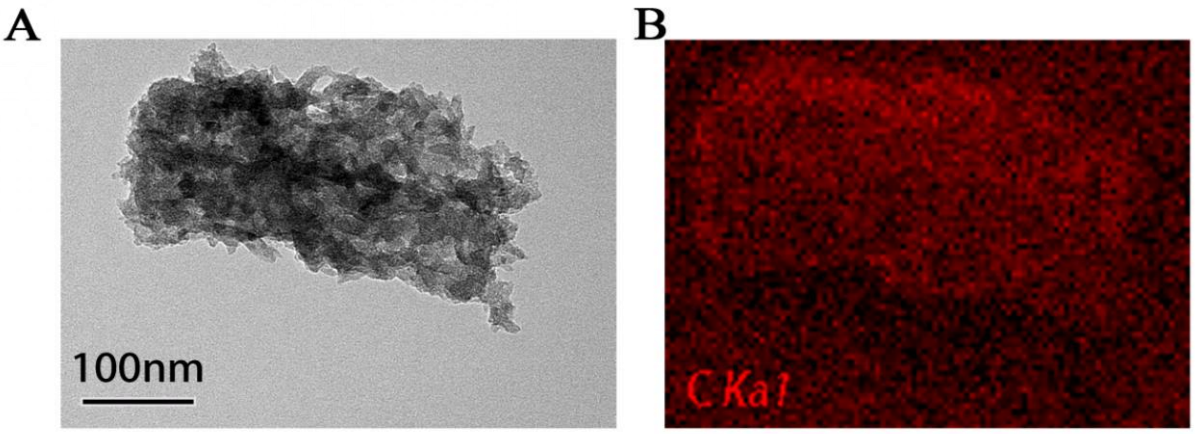

Fig. S2 HRTEM (A) TEM-EDS mapping images of TiO_2NTs composite (B).

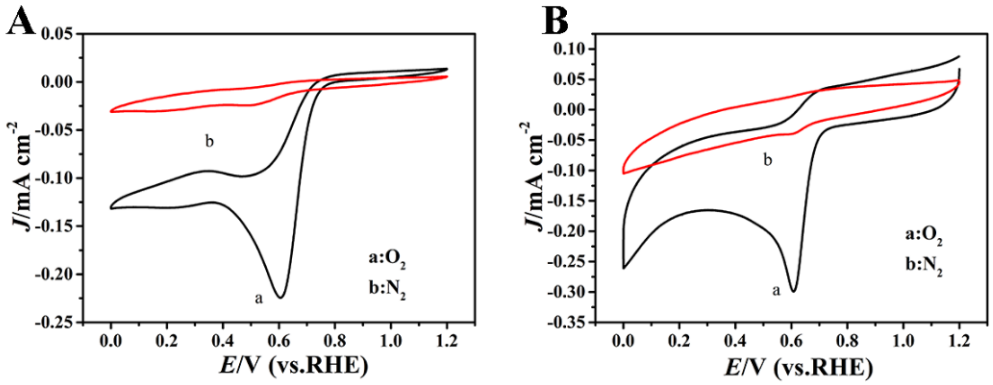

Figure S3 Cyclic voltammograms of TiO_2NTs(A), rGO (B) in N_2 and O_2-saturated 0.1 M KOH solution at scanning rate of 10 mV s^{-1}

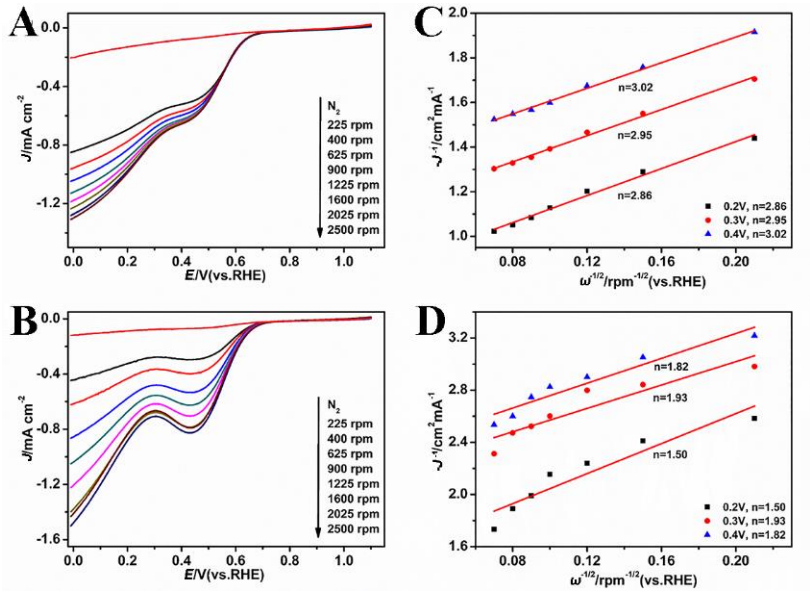

Figure S4 LSV curves of different catalysts in O_2-saturated 0.1 M KOH solution with various rotation rates at scanning rate of 10 mV s^{-1} and Koutecky-Levich plots for different catalysts at different electrode potentials: (A, C) TiO_2NTs, (B, D) rGO.

Notes and references

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