

Supporting Information

Sustainable Seaweed-based One-dimensional (1D) Nanofibers as High-performance Electrocatalysts for Fuel Cells

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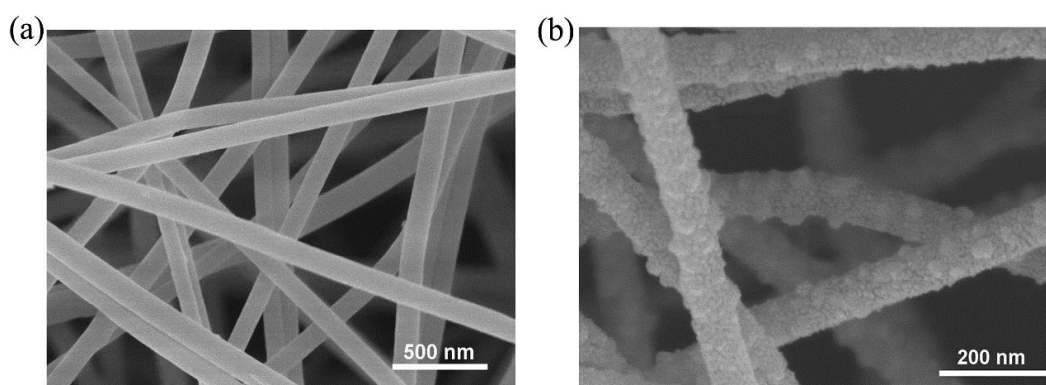


Figure S1. SEM images of (a) the as-synthesized SACNT-NF and (b) N-CACNT-NF.

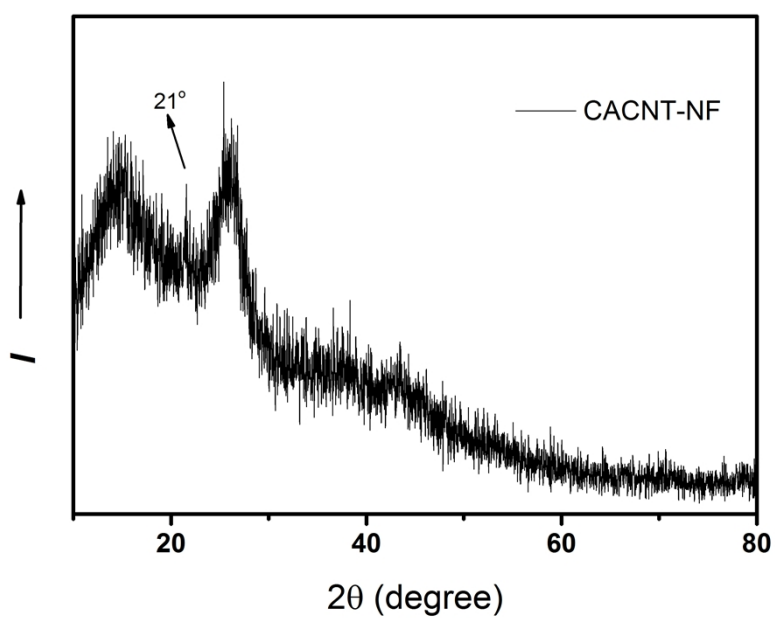


Figure S2. XRD patterns of the CACNT-NF

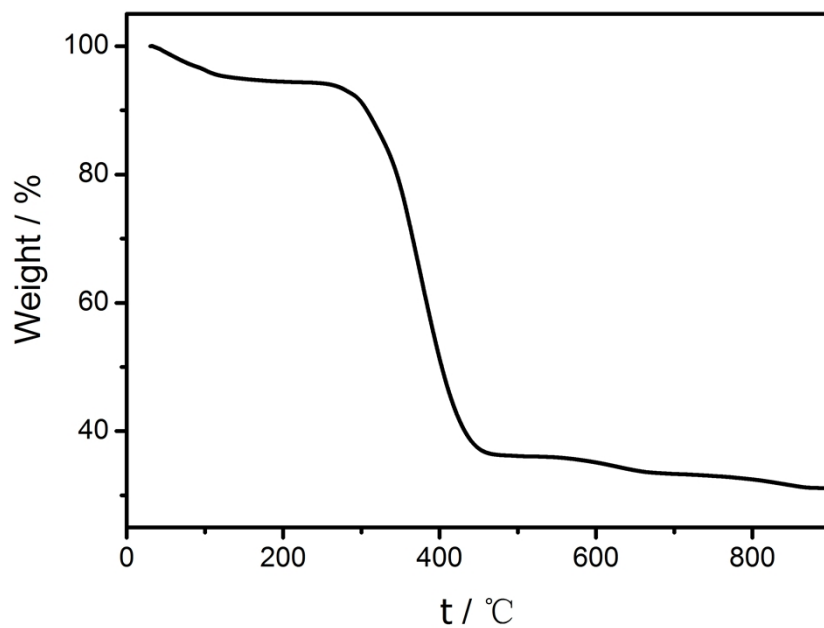


Figure S3. TGA weight change curves of N-CACNT-NF tested in air with a ramp rate of 10 °C/min.

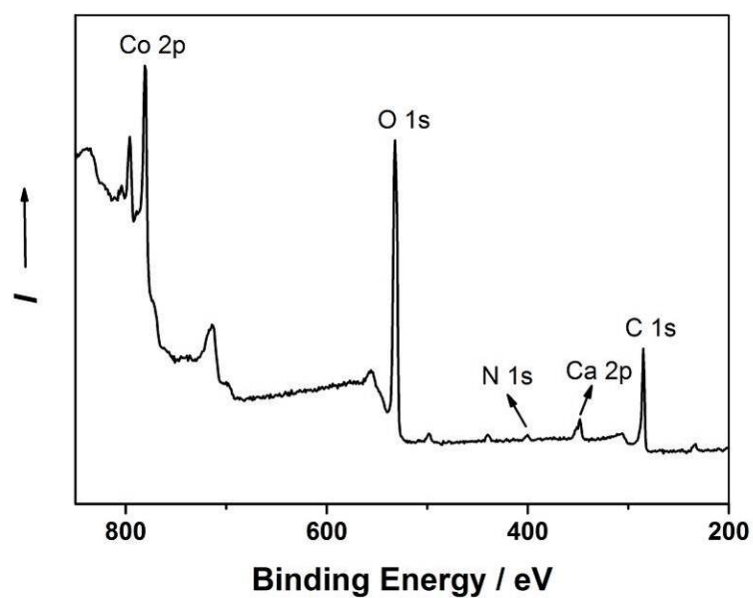


Figure S4. XPS survey for the as-synthesized N-CACNT-NF.

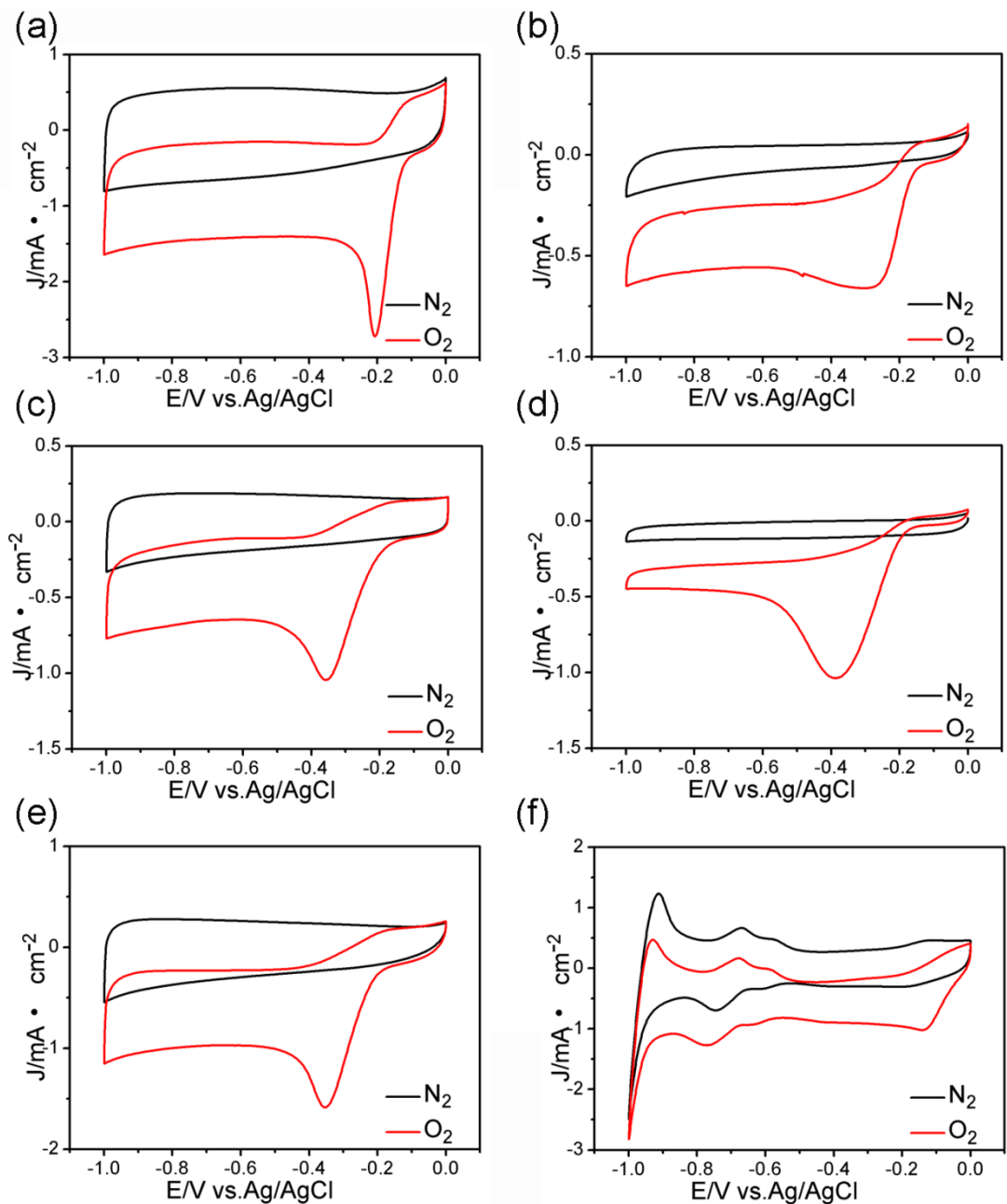


Figure S5. CV test results of (a) N-CACNT-NF, (b) N-CACNT, (c) N-CNTs, (d) N-CA-NF, (e) C-CACNT-NF and (f) 20% Pt/C in 0.1 M KOH aqueous solution saturated with N₂ and O₂.

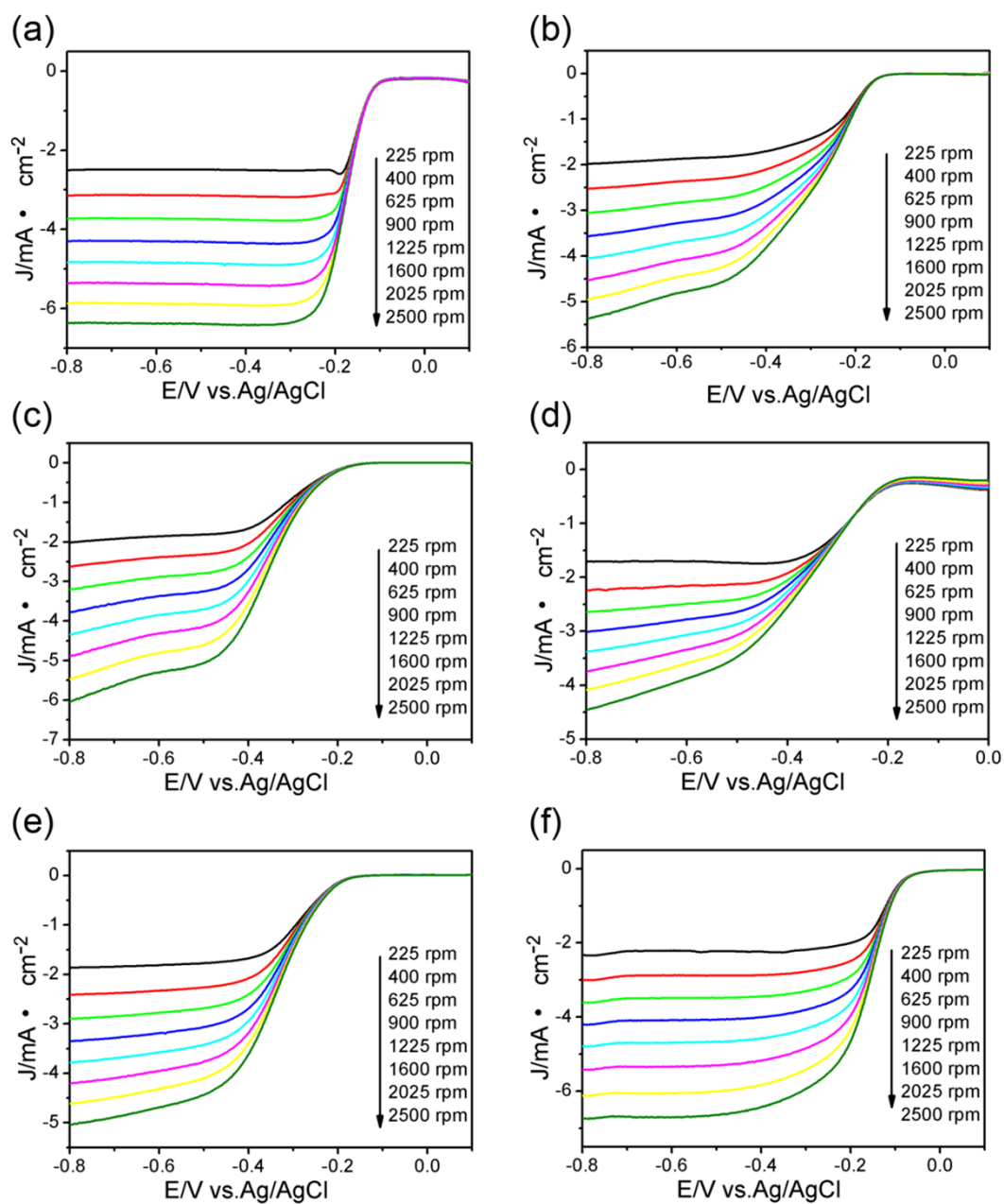


Figure S6. LSVs at different rotation speeds (from 225 to 2500 rpm) of (a) N-CACNT-NF, (b) N-CACNT, (c) N-CNTs, (d) N-CA-NF, (e) C-CACNT-NF and (f) 20% Pt/C.

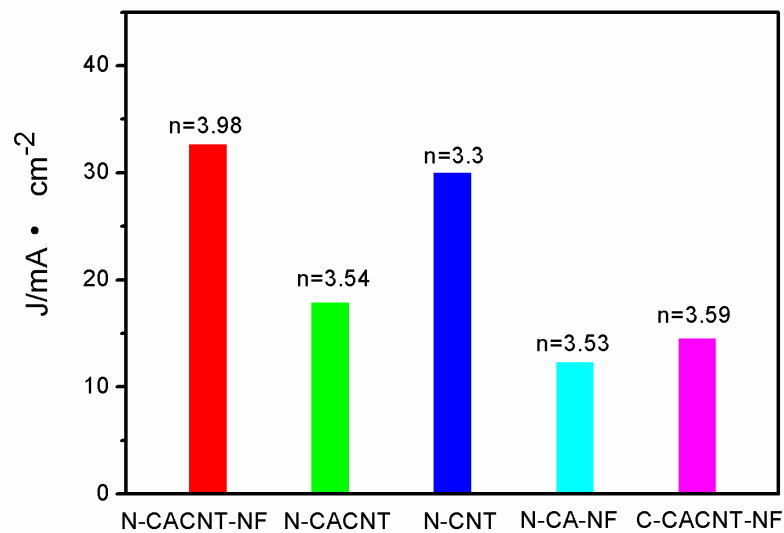


Figure S7. Electrochemical activity given as the fully diffusion-limited current density (J_K) at -0.45 V for N-CACNT-NF, N-CACNT, N-CNTs, C-CA-NF and C-CACNT-NF.

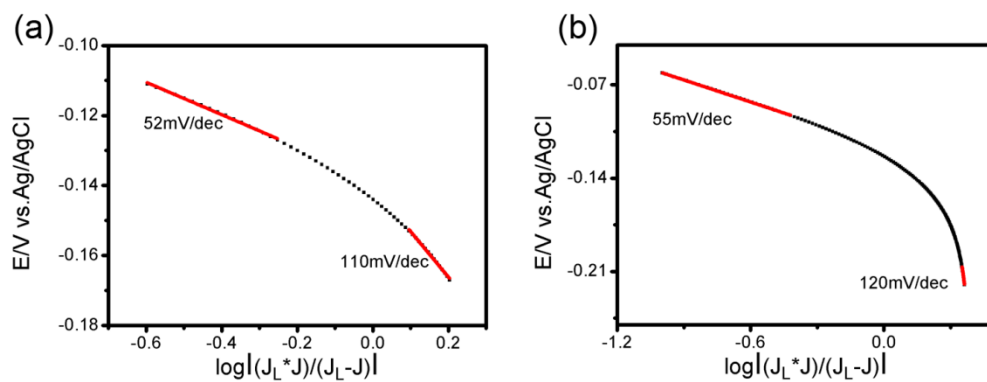


Figure S8. Linear fitting of Tafel plots at low and high over potentials regions for (a) N-CACNT-NF and (b) Pt/C.

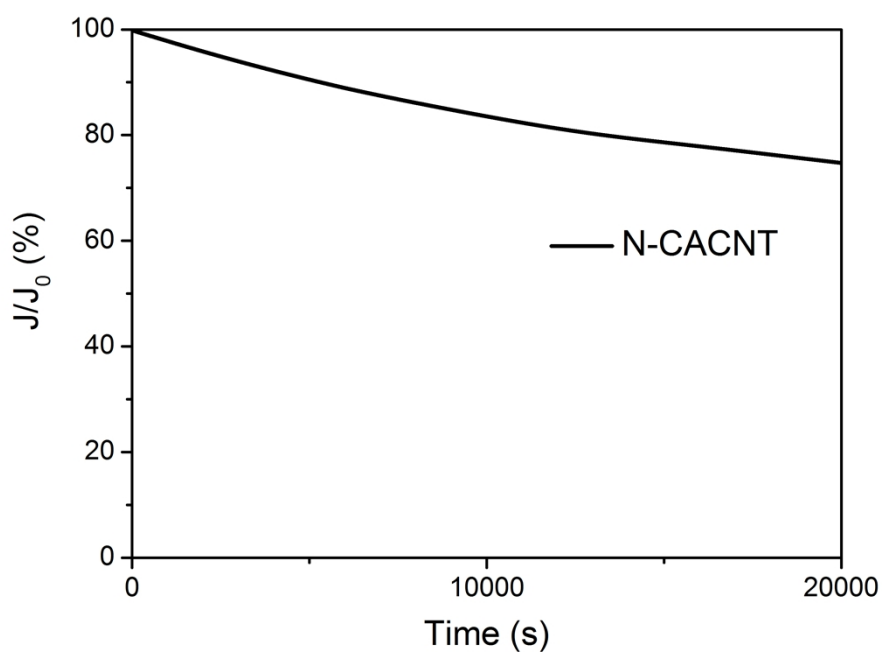


Figure S9. Long-term stability (-0.6 V vs. Ag/AgCl) test of N-CACNT in 0.1 M KOH.

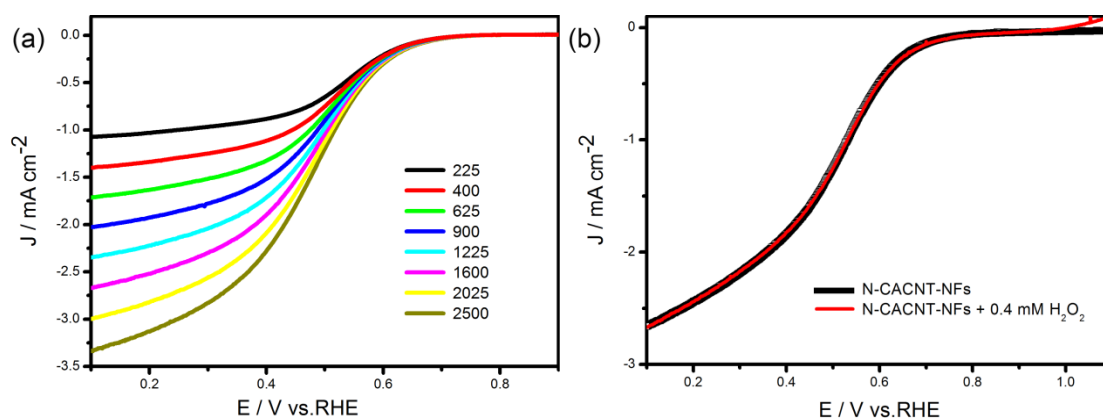


Figure S10. Voltamperograms for oxygen reduction on N-CACNT-NF (a) in O_2 -saturated 1 M $HClO_4$ at various rotation speeds with scan rate of 10 mV/s and (b) in O_2 -saturated 1 M $HClO_4$ at 1600 rpm before and after H_2O_2 was added.

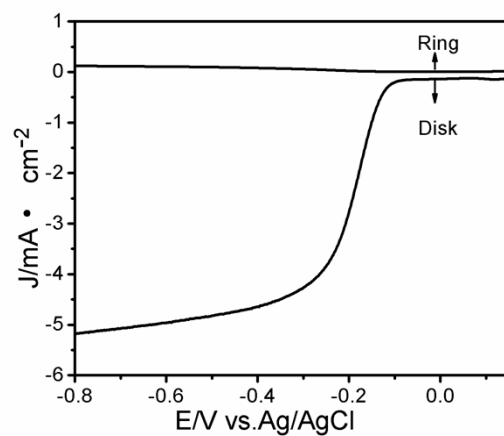


Figure S11. RRDE and RDE voltammograms at 1600 rpm in O_2 saturated 0.1 M KOH solution.