

Supporting information

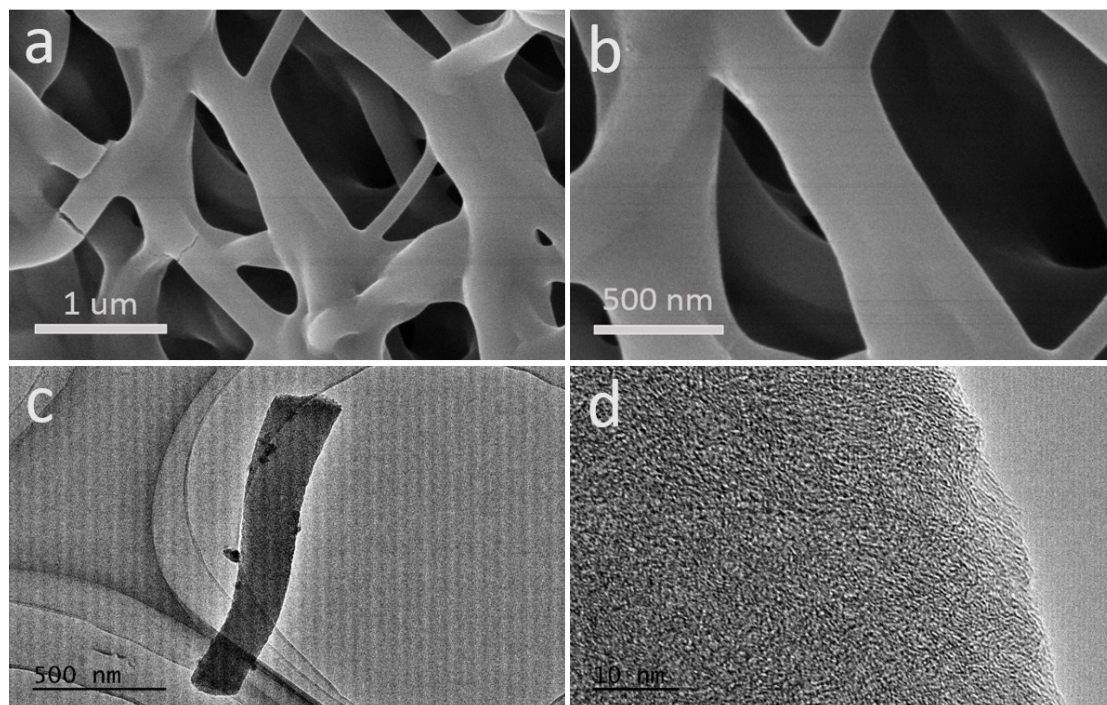


Fig. S1 (a and b) SEM and (c and d) TEM images of CNFs.

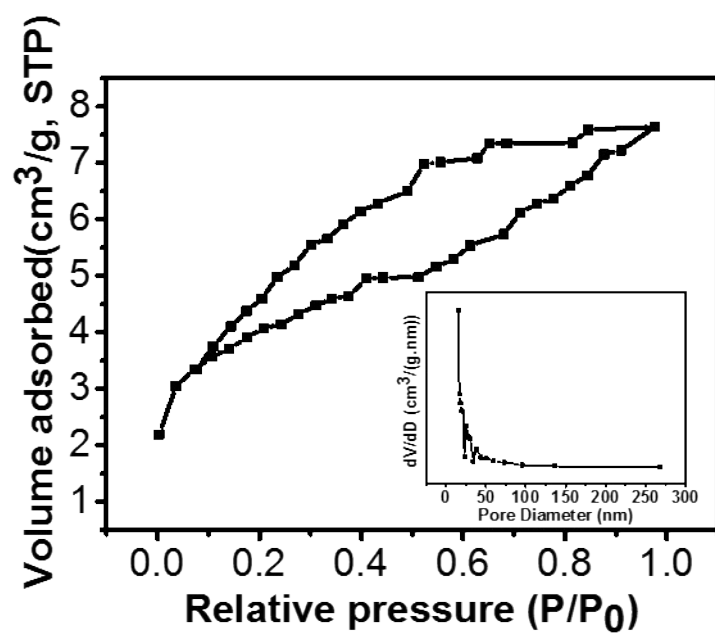


Fig. S2 N₂ sorption isotherms and pore size distribution (inset) of CNFs.

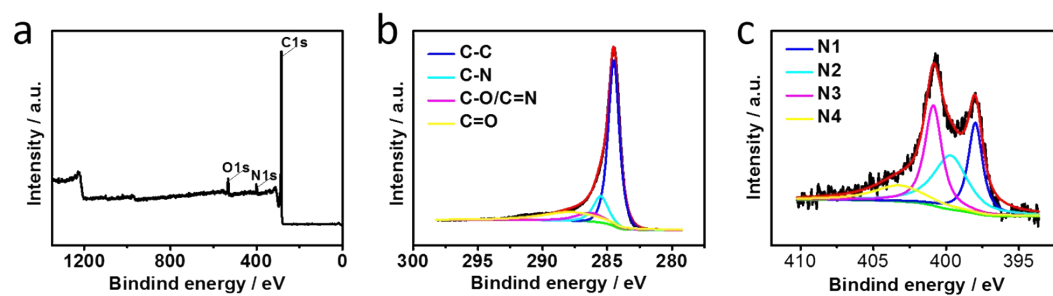


Fig. S3 (a) XPS spectra, (b) High resolution XPS spectra of C1s and (c) N1s for CNFs.

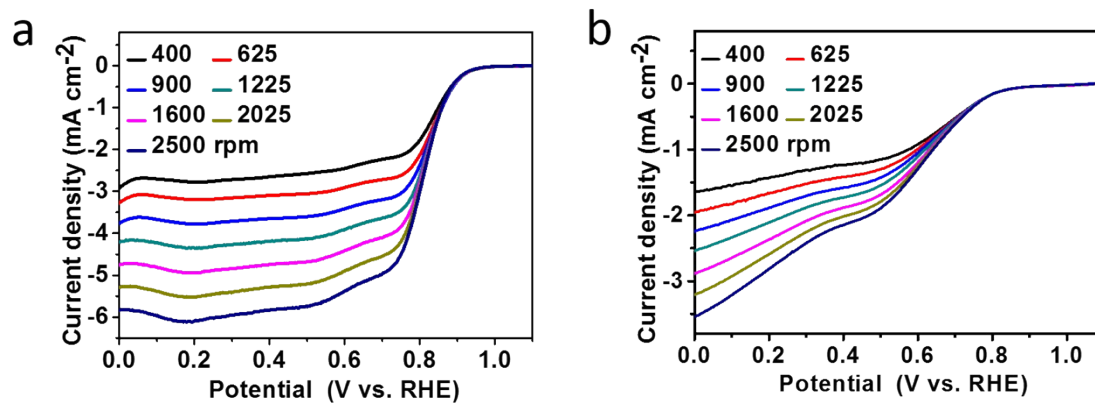


Fig. S4 The LSV curves of (a) commercial Pt/C and (b) CNFs at different scan rates in 0.1M O₂-saturated KOH solution.

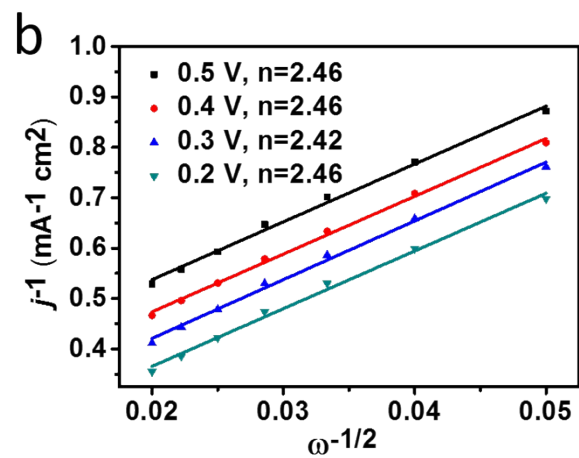
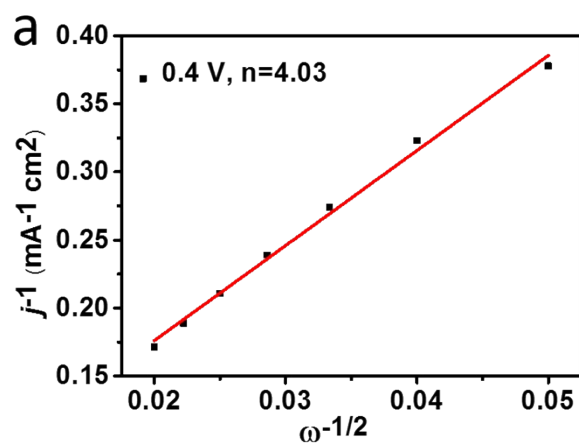


Fig. S5 The K-L plots of (a) commercial Pt/C at the potential of 0.4 V and (b) CNFs at various potential of 0.2V, 0.3 V, 0.4V and 0.5V.

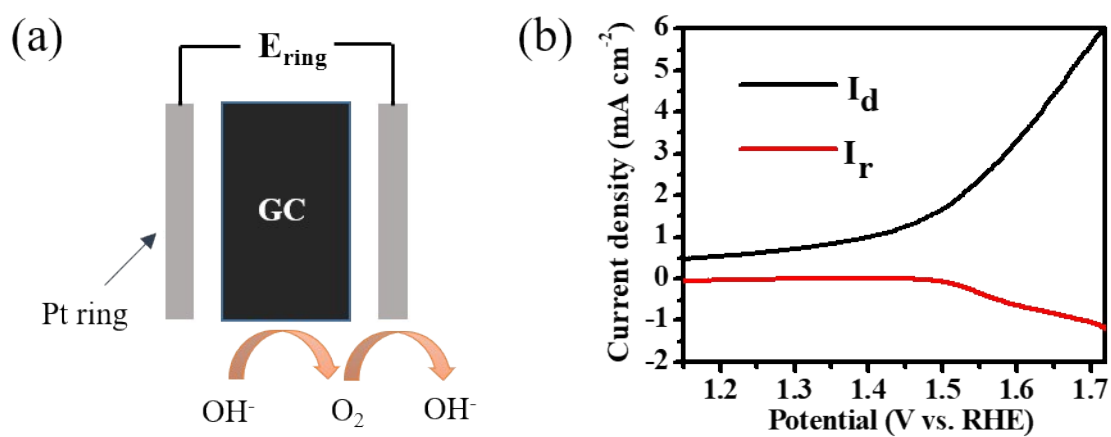


Fig. S6 (a) the schematic diagram of RRDE test, (b) the OER test of NPFC catalyst on RRDE with the applied ring potential of 0.4V vs RHE at 1600 rpm in N_2 saturated 0.1 M KOH aqueous solution.