Supplementary information for the manuscript

"Effects of structural disorder and nitrogen content on oxygen reduction activity of polyvinylpyrrolidone-derived multi-doped carbon"

1. Oxygen reduction reaction activity in alkaline media:

Figure S1 exhibits the CV scans of as-synthesized CNx modified GC electrodes in Ar (dotted curves) and O_2 (solid curve) saturated 0.1 M KOH electrolyte. The cathodic peak around -0.4 V vs Ag/AgCl (1.0 M KCl) disappear in absence of O2, suggesting its origin to be the oxygen reduction reaction. Similarly, Figure S2 exhibits the CV scans of acid-treated CNx modified GC electrodes in Ar (dotted curves) and O_2 saturated 0.1 M KOH electrolyte.

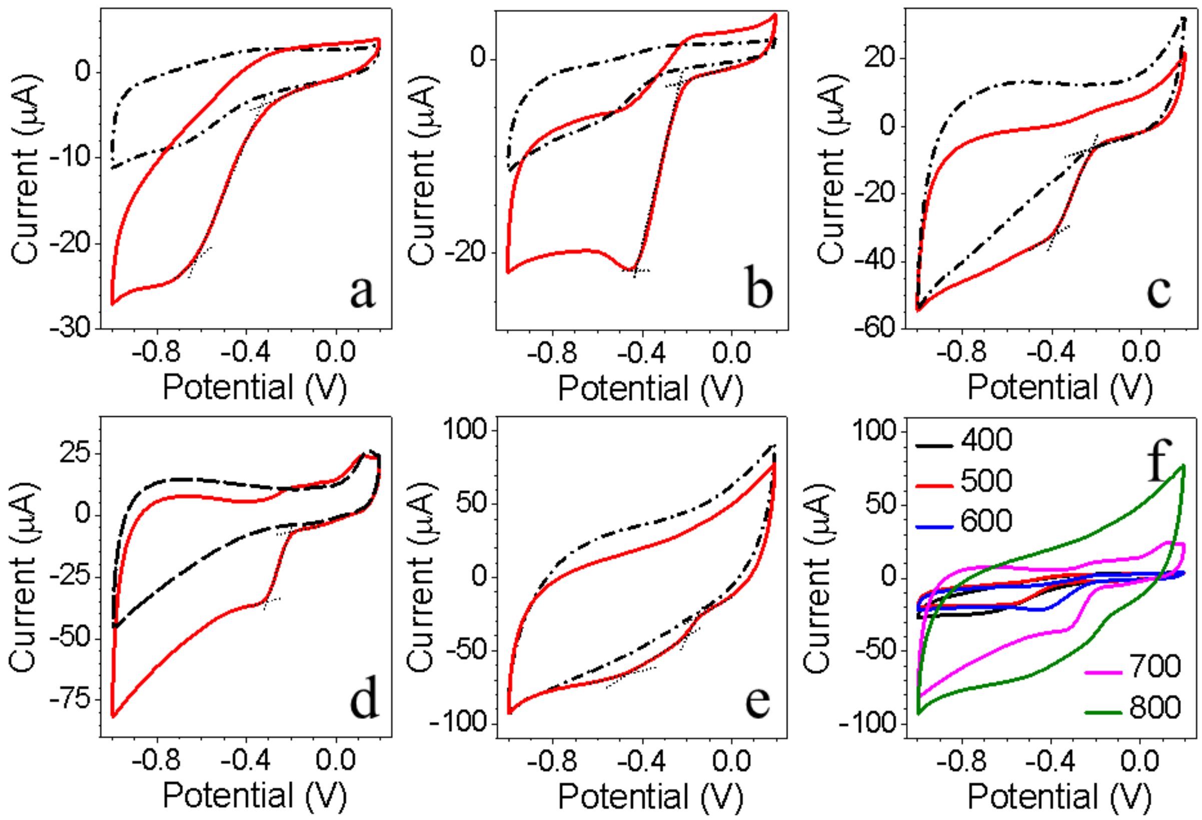

Figure S1: Cyclic voltammograms of as-synthesized CN_x in O_2 (solid curves) and Ar (dashed curves) saturated aqueous 0.1 mol L^{-1} KOH electrolyte for (a) CNx/400, (b) CNx/600, (c) CNx/600, (d) CNx/700 and (e) CNx/800 measured at a scan rate of 50 mV/s. (f) CV curves of CN_x in O_2 saturated KOH plotted at same Y-scale.

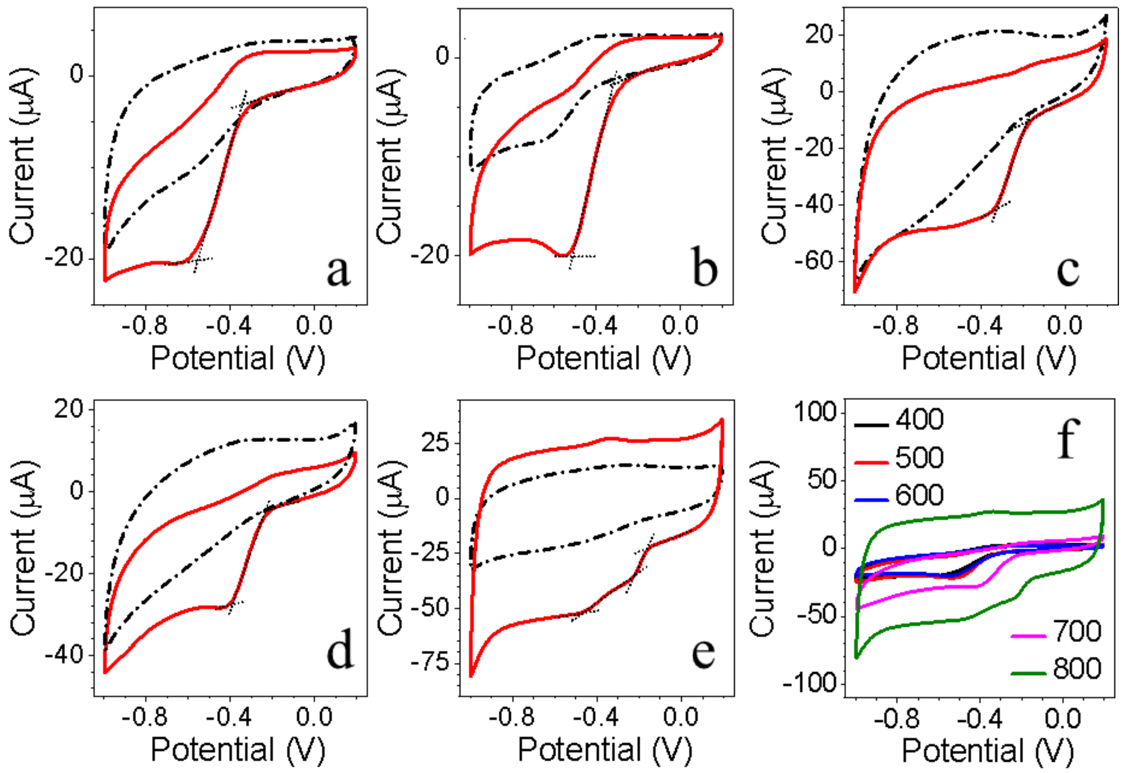

Figure S2: Cyclic voltammograms of A/CN_x in O_2 (solid red curves) and Ar (dashed black curves) saturated aqueous 0.1 mol L^{-1} KOH electrolyte for (a) A/CNx/400, (b) A/CNx/600, (c) A/CNx/600, (d) A/CNx/700 and (e) A/CNx/800 measured at a scan rate of 50 mV/s. (f) CV curves of A/CN_x in O_2 saturated KOH plotted at same Y-scale.

2. Methanol oxidation reaction activity in acidic media:

Figure S3 shows the CV scans for as-synthesized as well as acid-treated CN_x in an electrolyte containing 1.0 M H_2SO_4 and 1.0 M CH_3OH at a scan rate of 50 mV s^{-1}. Anodic peak around 0.7 V vs Ag/AgCl (1.0 M KCl) corresponds to the methanol oxidation reaction.

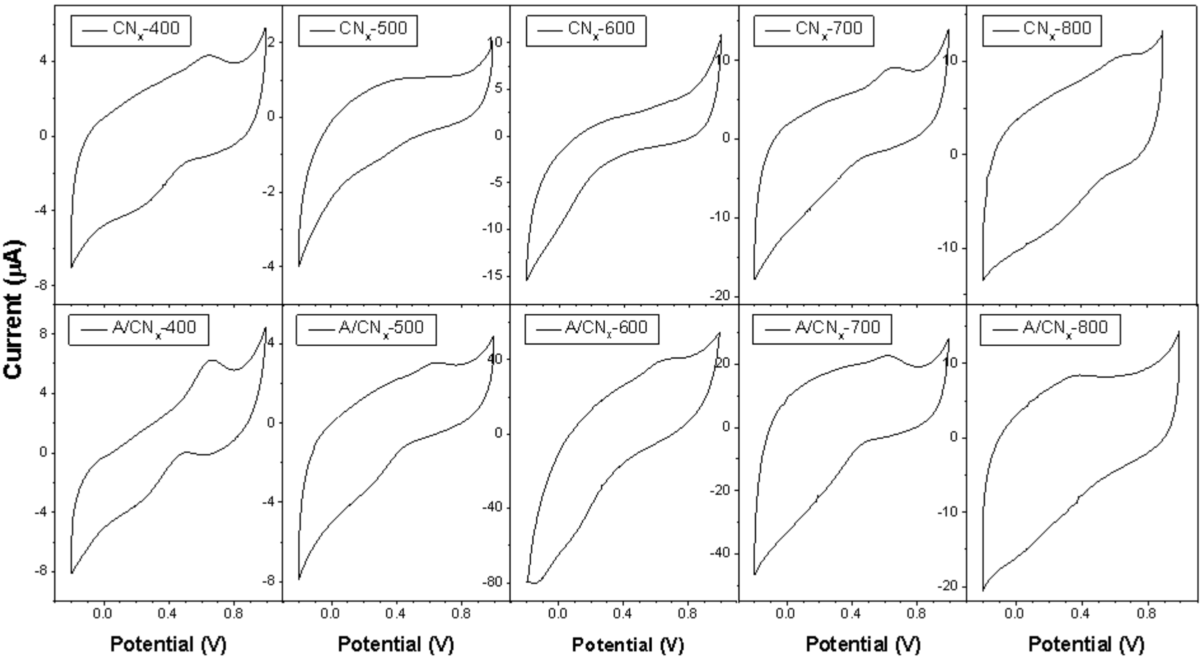

Figure S3: Cyclic voltammograms in an electrolyte containing 1.0 M H_2SO_4 and 1.0 M CH_3OH at a scan rate of 50 mV s^{-1} for as-synthesized as well as acid-treated CN_x synthesized at T_p of 400, 500, 600, 700 and 800 ^oC. The anodic peaks at ~ 0.7 V exhibits the methanol oxidation reaction.