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ELECTRONIC SUPPORTING INFORMATION

Oxygen Reduction Reaction at MWCNT-Modified Nanoscale Iron(II) Tetrasulfophthalocyanine: Remarkable Performance Over Platinum and Tolerance to Methanol in Alkaline Medium

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As shown in the FESEM images below (Fig. S1), the pristine FeTSPc molecule is bulky and micron-sized while the nanoFeTSPc is nanostructured agglomerates

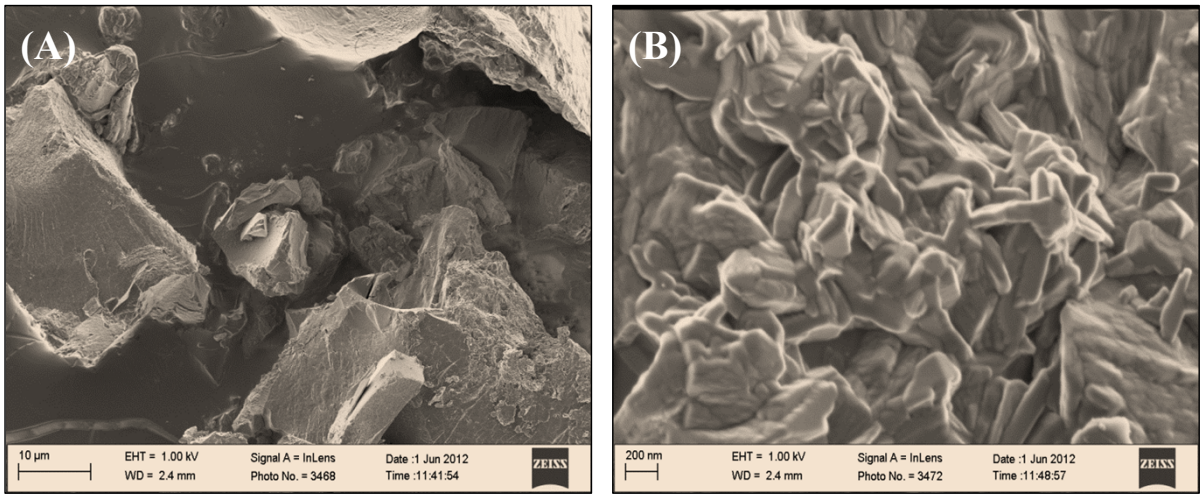

Figure S1: FESEM images of pristine FeTSPc and nanoFeTSPc

Fig. S2 shows the EDX spot analysis providing semi-quantitative information on elemental concentrations of the pristine FeTSPc and nanoFeTSPc. A typical atomic percent gave S = 24.95±0.23 % and Fe = 5.85±0.22 %, which is the expected atomic ratio of Fe:4S for the FeTSPc. The result also suggests less than 7% of impurities of surface bromine generated from the unreacted ammonium head groups of the CTAB upon coordinate covalency bonding with the FeTSPc.

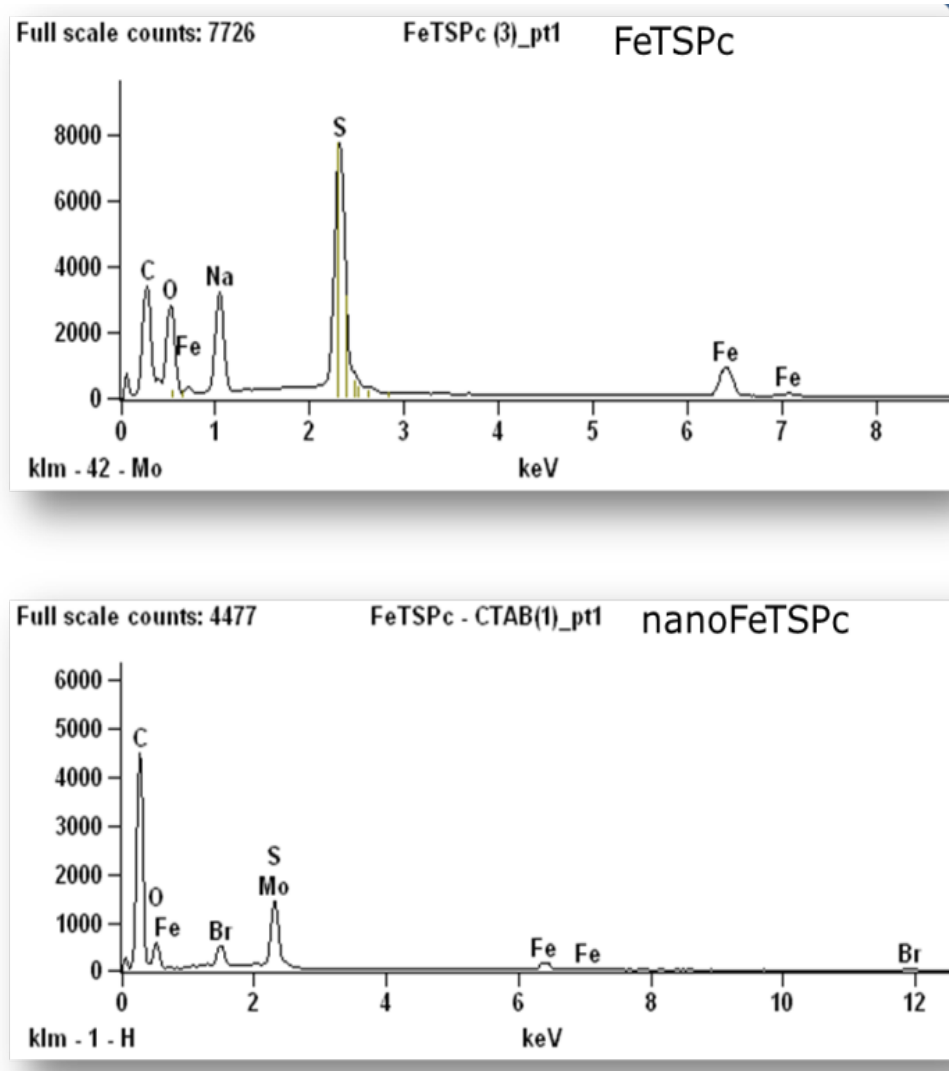

Figure S2: Typical EDX spectra of FeTSPc and nanoFeTSPc

As shown in Fig. S3, the ORR is best at nanoFeTSPc-*o*-MWCNT and nanoFeTSPc-*s*-MWCNT compared to the individual components, nanoFeTSPc, *o*-MWCNT and *s*-MWCNT.

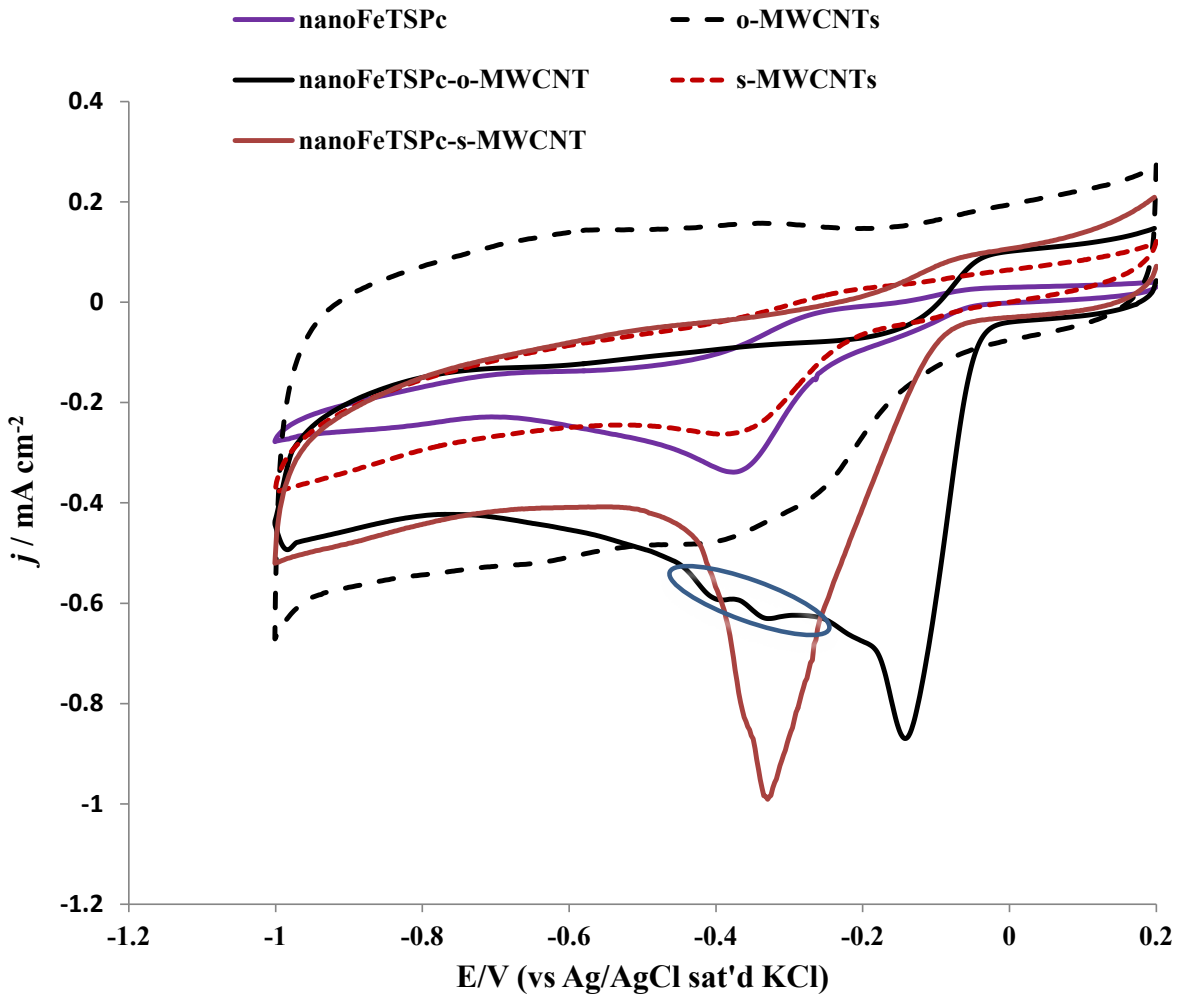

Figure S3: Cyclic voltammograms of *o*-MWCNTs, *s*-MWCNTs, nanoFeTSPc, nanoFeTSPc-*o*-MWCNTs and nanoFeTSPc-*s*-MWCNTs in oxygen-saturated 0.1 M KOH solution at a scan rate of 25 mVs^{-1}. The nanoFeTSPc-*o*-MWCNT for the ORR showed a pair of weak but broad peaks (encircled) due to the quinolic and/or carbonyl groups of the acid-functionalised MWCNTs.