**Figure S1:**

![HR-TEM image of ~ 50 nm CNOs. The concentric layer uniquely possessed by CNOs is revealed by HR-TEM. The lattice spacing measured between the curved graphene layers in the onions is ~ 0.35 nm, which is close to that of the graphite (002) plane.](image-url)
Figure S2: HR-TEM image of 5 nm Pt nanoparticles decorated on 50 nm CNOs (Pt-CNOs). The lattice spacing measured on Pt nanoparticle was found to be ~0.23 nm, which corresponds to the Pt (111) plane.
Figure S3: Pt nanoparticle distribution on carbon nanoparticle. The average nanoparticle size was estimated ~ 2.5 nm.
Figure S4: XRD pattern of (a) carbon nano particles (CNPs) and (b) Platinum nanoparticle decorated Carbon Nano-Particles (Pt-CNPs).
Figure S5: The EIS measurement of pristine CNOs at different frequencies at (0.1 M solution of Na$_2$SO$_4$.)

\[\text{Figure S5:} \]
Figure S6: The EIS measurement of Pt-CNOs at different frequencies at (0.1 M solution of Na$_2$SO$_4$).