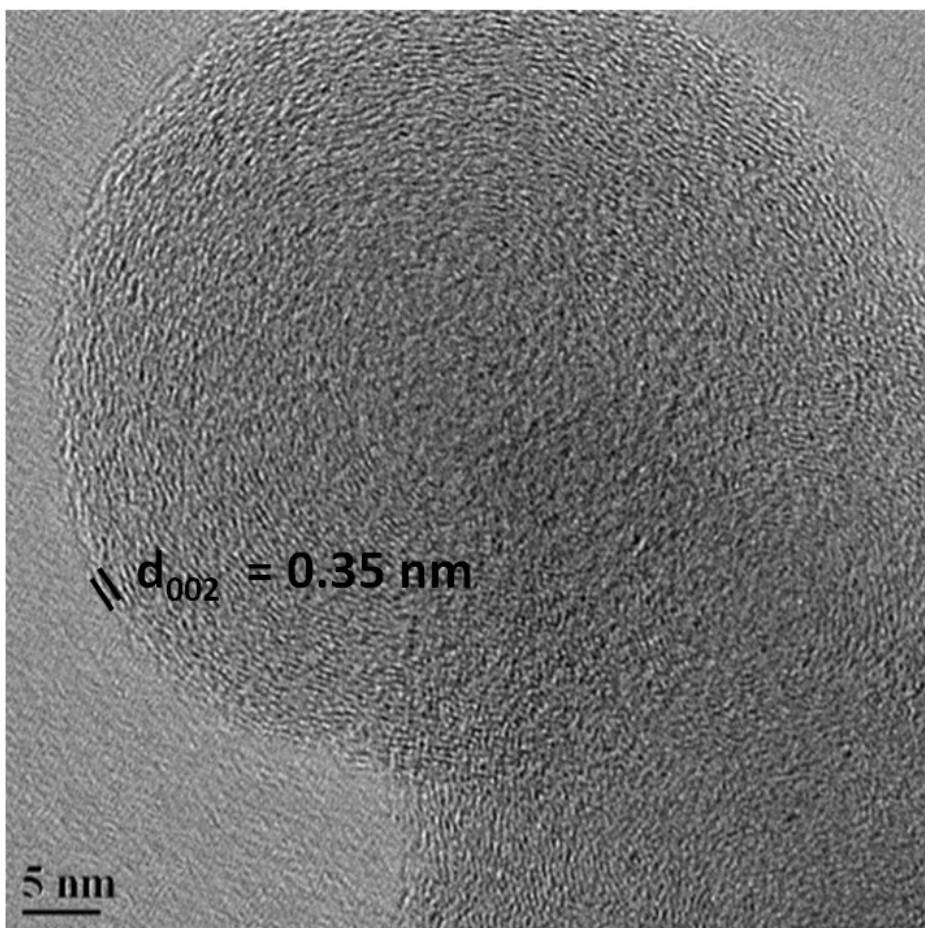
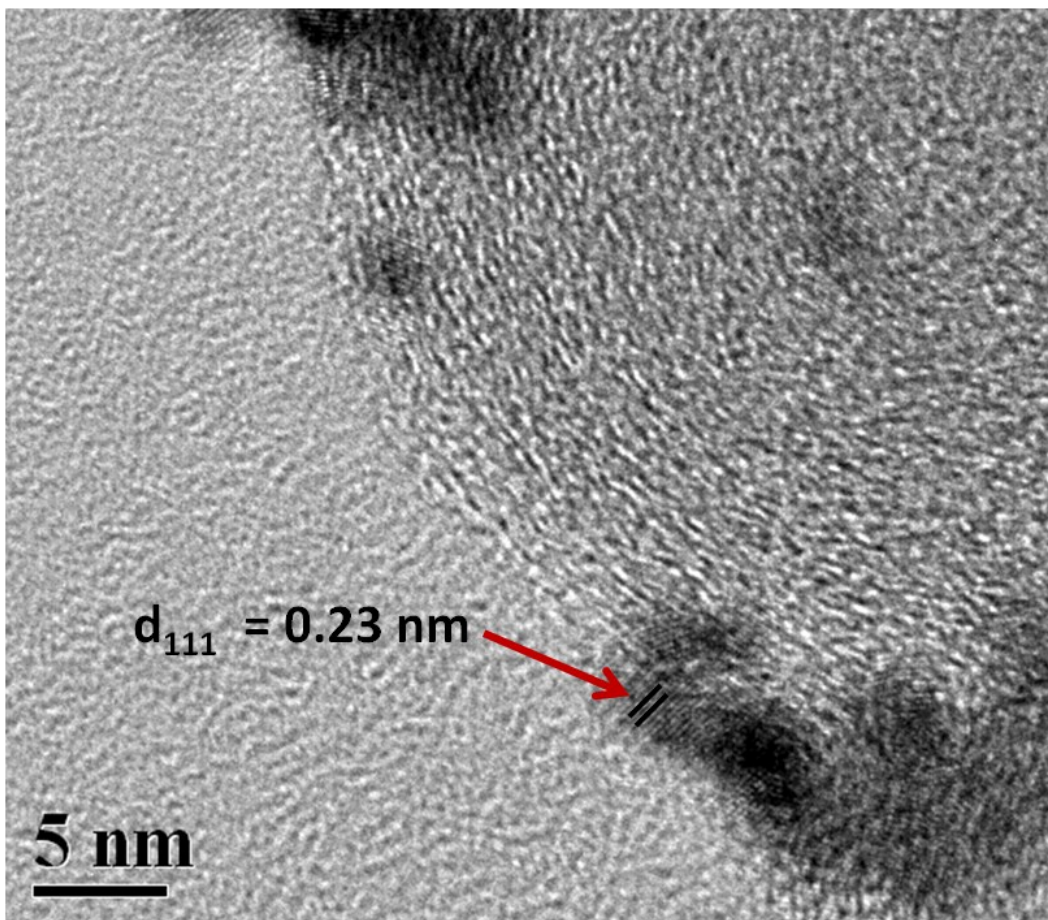


**Figure S1:**



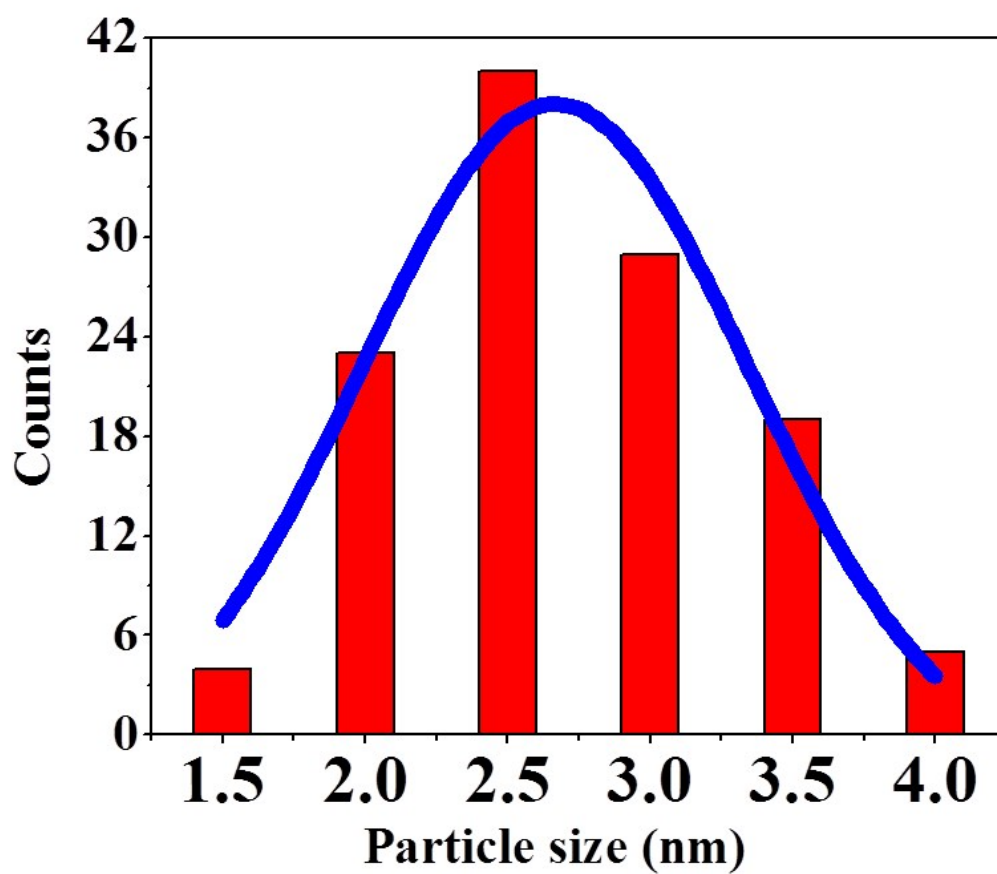
**Figure S1:** HR-TEM image of  $\sim 50 \text{ nm}$  CNOs. The concentric layer uniquely possessed by CNOs is revealed by HR-TEM. The lattice spacing measured between the curved graphene layers in the onions is  $\sim 0.35 \text{ nm}$ , which is close to that of the graphite (002) plane.

**Figure S2:**



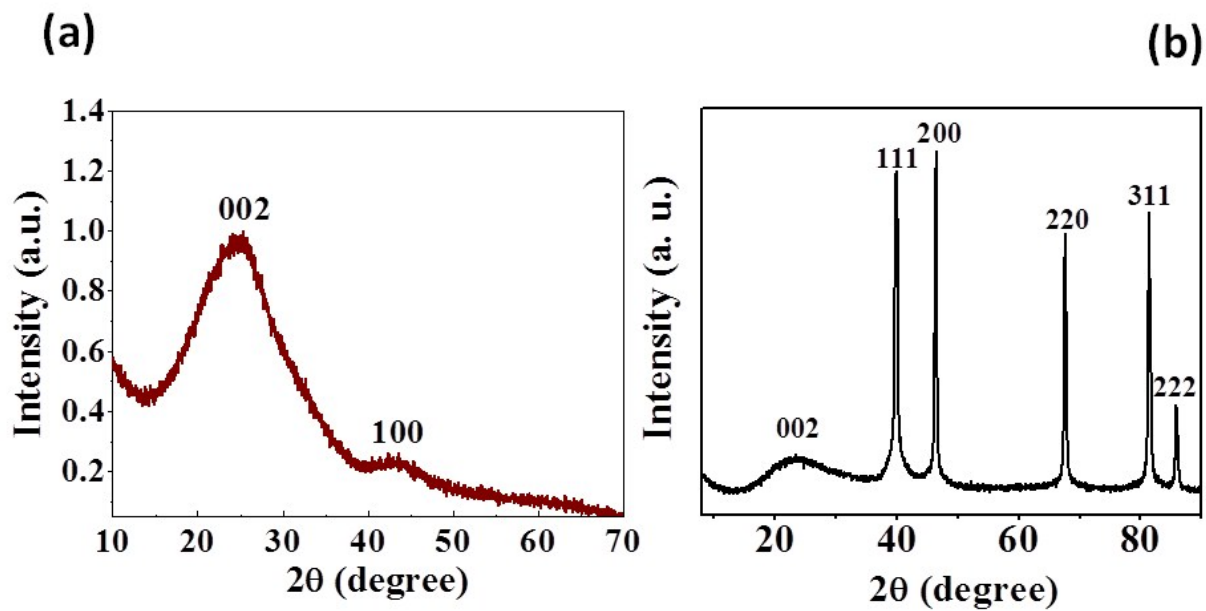
**Figure S2:** HR-TEM image of 5 nm Pt nanoparticles decorated on 50 nm CNOs (Pt-CNOs). The lattice spacing measured on Pt nanoparticle was found to be  $\sim 0.23$  nm, which corresponds to the Pt (111) plane.

**Figure S3:**



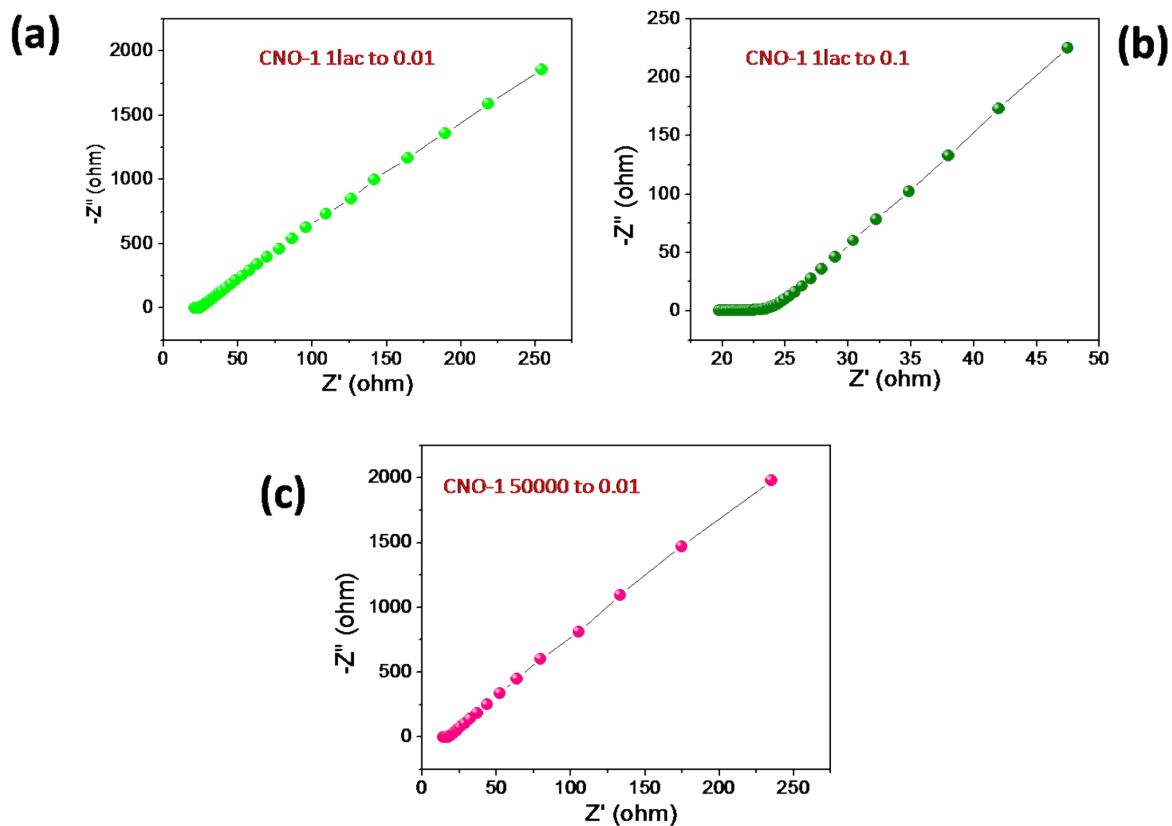
**Figure S3:** Pt nanoparticle distribution on carbon nanoparticle. The average nanoparticle size was estimated ~ 2.5 nm.

**Figure S4:**



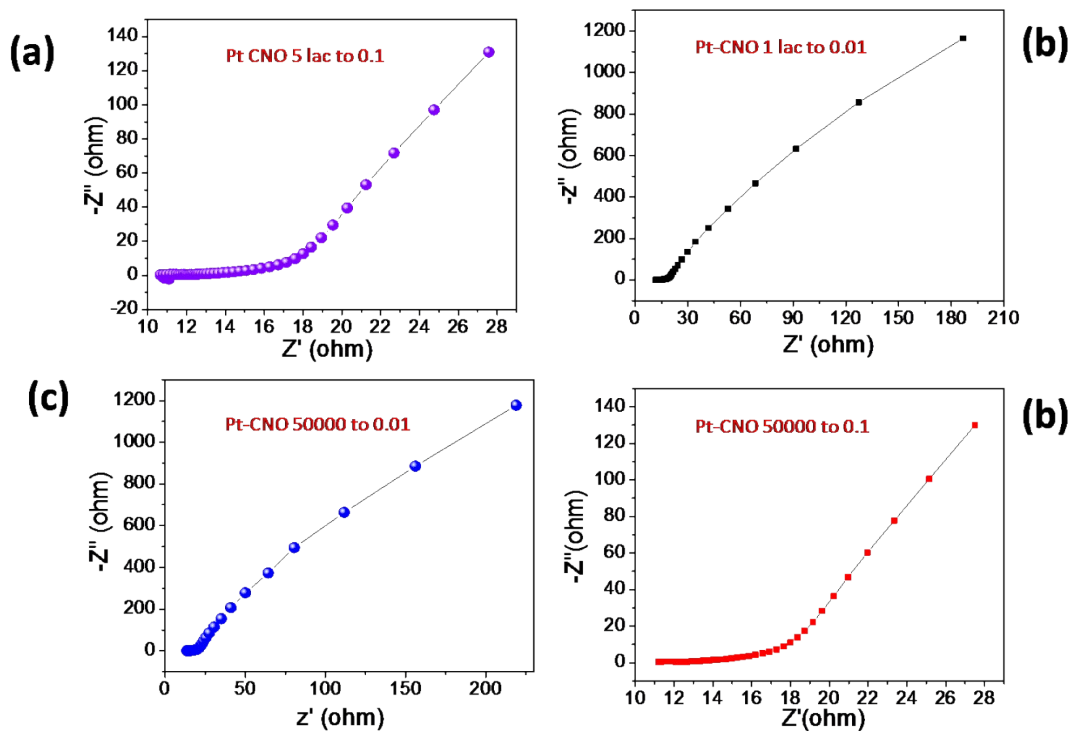
**Figure S4:** XRD pattern of (a) carbon nano particles (CNPs) and (b) Platinum nanoparticle decorated Carbon Nano-Particles (Pt-CNPs).

**Figure S5:**



**Figure S5:** The EIS measurement of pristine CNOs at different frequencies at (0.1 M solution of  $\text{Na}_2\text{SO}_4$ ).

**Figure S6:**



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