Supporting Information:

Highly Porous Pd Nanostructures and Reduced Graphene Hybrids: Excellent Electrocatalytic Activity towards Hydrogen Peroxide

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EXPERIMENTAL SECTION

Synthesis of Graphene Oxide (GO)

Graphene oxide (GO) was prepared from graphite powder by modified Hummer's method reported in our previous article [1]. In detail, 1 g of graphite powder was added to 25 mL of concentrated H_2SO_4 in a 250 mL conical flask and kept inside an ice bath under stirring. 3.5 g of $KMnO_4$ was slowly added. Then the mixture was kept in a water- bath at room temperature and stirred for two hours. After that, the mixture was cooled down inside an ice-bath followed by the addition of 50 mL of water. Then, a sufficient amount of H_2O_2 (30%) was poured into the solution until the evolution of gases ceased. Finally, a brown colour solution was obtained. The solution was filtered, and the solid residue was repeatedly washed with 0.1 M HCl and copious amounts of water for the complete removal of SO_4^{2-} ions. The purified GO was dried and stored in the desiccator for prior use.

1. S.C. Sahu, A.K. Samantara, A. Dash, R. R. Juluri, R.K. Sahu, B. K. Mishra and B.K. Jena, *Nano Res.,* 2013, **6,** 635.

Characterization and Electrochemical Measurements

The morphology and surface structure of PPd NSs and RG-PPd NSs were analyzed by TEM images obtained from FEB Tecnai G2 20 instrument operated at 200 kV (The Netherland). The reduction of GO was investigated by UV-visible spectrophotometer (Shimadzu UV-2600), Raman instrument (Renishaw in Via Raman microscope). The surface composition was studied by X-ray Photoelectron spectroscopic measurement (PREVAC, S/N-10001, Poland). All the electrochemical measurements were carried out on CHI 760D electrochemical work station (CHI Instrument, USA). The electrochemical data were obtained by using two compartment three electrode cell which includes the nanostructured modified glassy carbon electrode as working electrode, a Pt wire as auxiliary electrode and Ag/AgCl (3M KCl) as reference electrode.