Supporting Information

Graphene Supported Nickel Nanoparticle as a Viable Replacement for Platinum in Dye Sensitized Solar Cells

S1. X-ray photoelectron spectroscopy (XPS) measurements.

To investigate the surface chemistry states, the synthesized graphene platelets (GP) were characterized by using x-ray photoelectron spectroscopy (XPS)(ThermoVG RSCAKAB 250X high resolution XPS system). Figure S1 (a) shows the broad scan XPS spectra indicating carbon 1s (C1s) and oxygen 1s (O1s) peaks. The peaks in the higher energy range (around ~750 eV, ~1000 eV) are attributed to the Auger peaks of C and O. Elemental analysis gave a carbon-to-oxygen ratio for the GP as ~9.1 by atomic %. This indicates that the GP are not completely reduced and contain residual oxygen. Figure s1 (b) depicts the C1s XPS spectra which is splited into two distinct peaks (285 eV, 286.1 eV), which are attributed to the non-oxygenated sp^2 C and the Carbon in C–OH bonds, respectively.

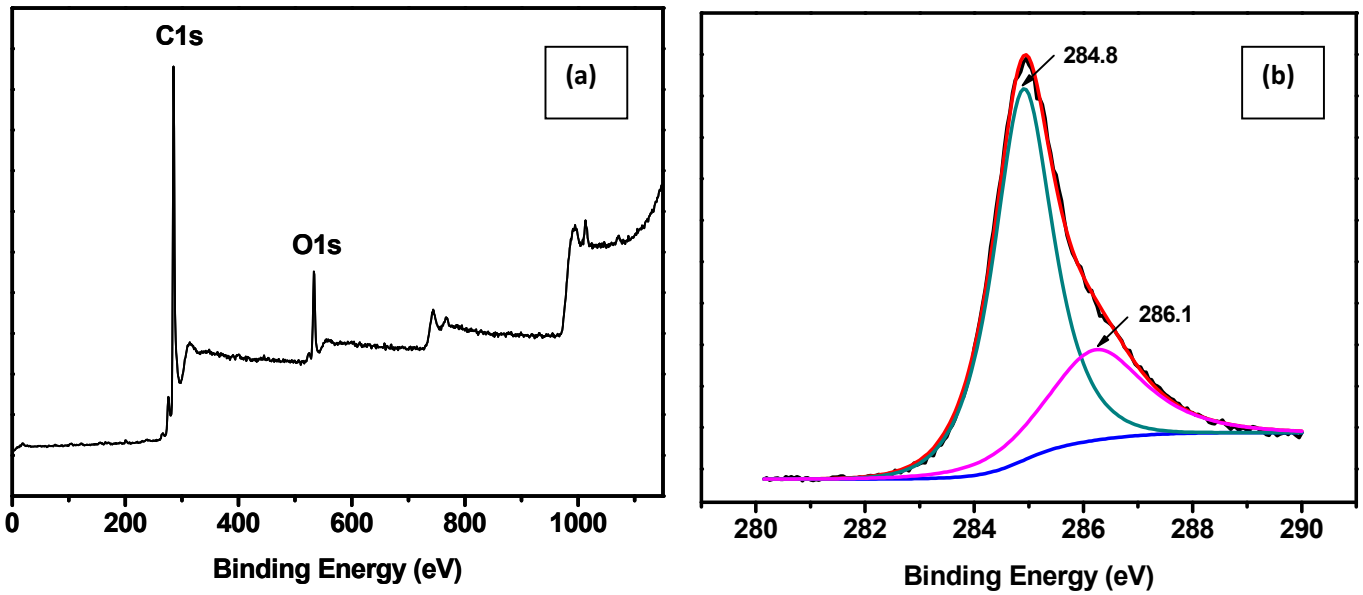

Figure S1: XPS spectra of GP (a) survey scan and (b) C 1s scan

S2. Transmission electron microscopy (TEM) analysis.

Transmission electron microscopy (TEM) (JEOL 2010) characterization of the grown GP is shown in Figure (S2). Figure S2 (a) is indicating the lateral graphen sheet with dimensions of several micro-meters. High resolution TEM (Figure S2 (b)) indicates that the typical GP are comprised of ~3-4 individual graphene sheets with an interlayer spacing of ~ 0.3 nm.

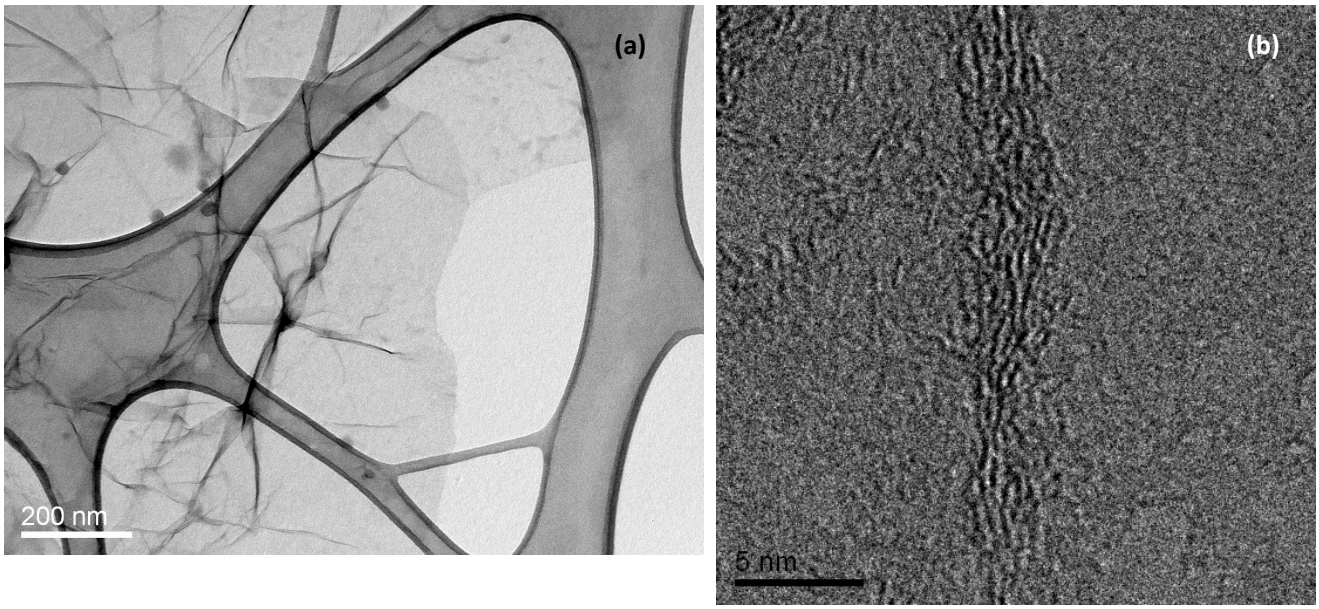

Figure S2: (a) TEM image of GP (b) high resolution TEM (HRTEM) image of the edge of GP