Electronic Supplementary Material (ESI) for RSC Advances.

Phenylenediamine functionalized reduced graphene oxide/polyaniline hybrid: Synthesis, characterization, improved conductivity and photocurrent generation

Supplementary information

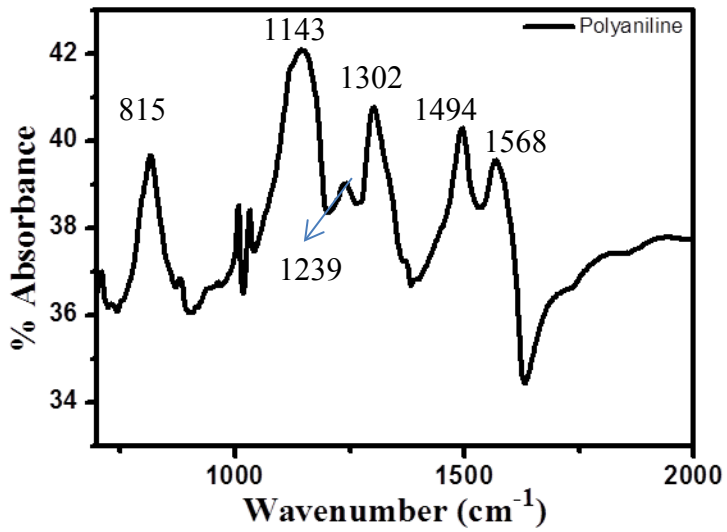

Fig. S1 FTIR spectrum of polyaniline

Figure S1 shows the FTIR spectrum of polyaniline. The out-of-plane bending vibration of C-H on 1,4-disubstituted rings are found at 815 cm^{-1} and the bands at 1568 and 1494 cm^{-1} are attributed to the C=C stretching vibrations of quinonoid rings and benzenoid rings respectively. Aromatic C-H in-plane bending vibration is observed at 1143 cm^{-1}. The vibration band at 1239 cm^{-1} corresponds to the $C\text{-}N^{\cdot+}$ stretching modes of the polaronic charge carriers in the doped polyaniline, while the peak at 1302 cm^{-1} is due to the stretching vibration of the C-N bond.

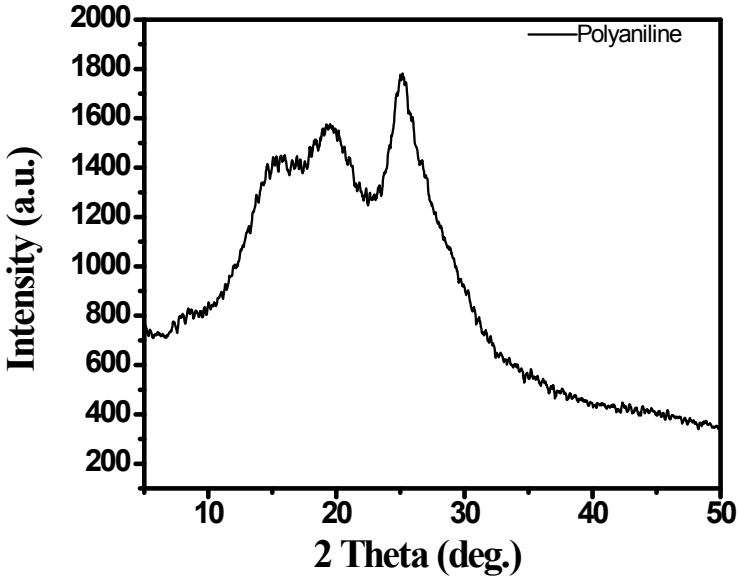

Fig. S2 FTIR spectrum of polyaniline

XRD spectrum of polyaniline as shown in Fig. S2 reveals three characteristic peaks at 15, 20, and 25^{o} corresponding to the (011), (020), and (200) planes respectively. The peak at 20 and 25^{o} are ascribed to periodicity parallel and perpendicular to the polymer chain respectively.

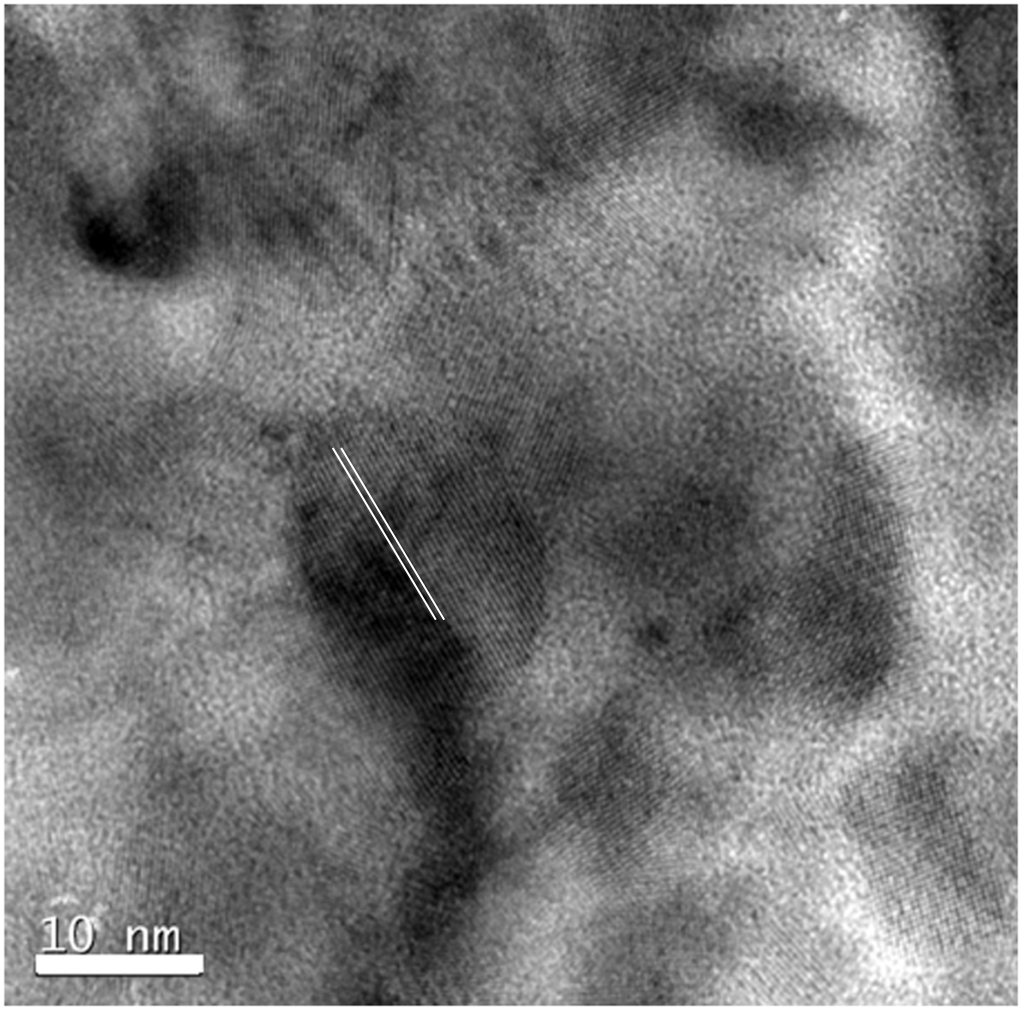

Fig S3. HRTEM image of the hybrid

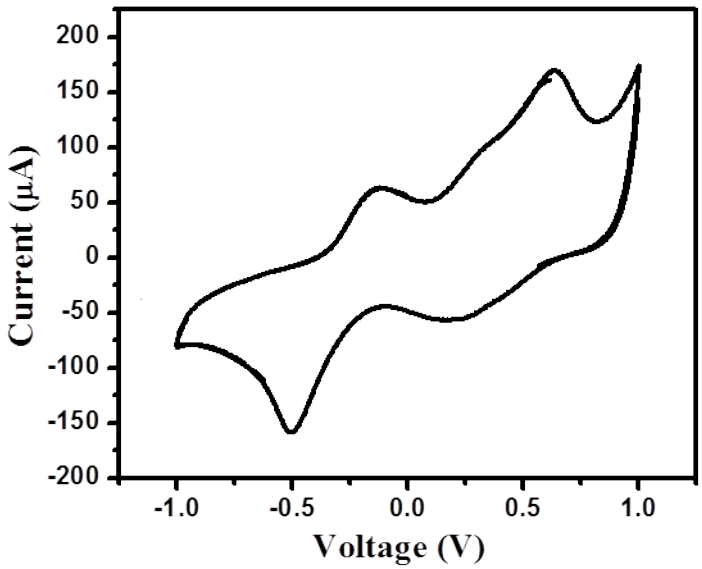

Fig. S4 CV of P1NH2G2 in 0.1 M NaCl at a scan rate of 100 mV/s