In X-ray Diffraction Pattern (XRD), graphite shows a characteristic peak at $2\theta = 26.7^{\circ}$. After the introduction of oxygen functionalities, the graphitic peak shifts to $2\theta = 10.3^{\circ}$. When PSS is grafted the peak at $2\theta = 10.3^{\circ}$ disappears and a new broad peak appears at $2\theta = 23.5^{\circ}$ due to the decrease of intercalated oxygen functionalities (Figure S1).



Figure S1. XRD pattern of graphite, GO and PSS-rGO

X-ray photoelectron spectroscopy (XPS) is employed to analyse extend of reduction of graphene oxide after the grafting of PSS. In the C 1s spectra of PSS-G the oxygen functionalities are considerably reduced, indicating the deoxygenation of graphene oxide (Figure S2). In addition, there is a peak at 285.2 eV corresponding to sulphur bonded carbon in PSS. By the reduction of graphene oxide in presence of PSS, a stable aqueous dispersion of graphene nanoplatelets is obtained.



Figure S2. C 1s XPS spectra of PSS-rGO



Figure S3. HRTEM image of rG/ZnO



Figure S4. XRD pattern of ZnO and rGO/ZnO



Figure S5. Cross-sectional SEM image of (PAM-ZnO/PSS-rGO)9