Supporting Information

Effect of an anionic surfactant (SDS) on the Photoluminescence of Graphene Oxide (GO) in acidic and alkaline medium

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Characterization of Graphene Oxide (GO):

We have characterized the prepared GO based on modified Hummer's method by Raman, FT-IR, XRD, SEM and TEM as given below:

S1: Raman Spectra, FT-IR and XRD:

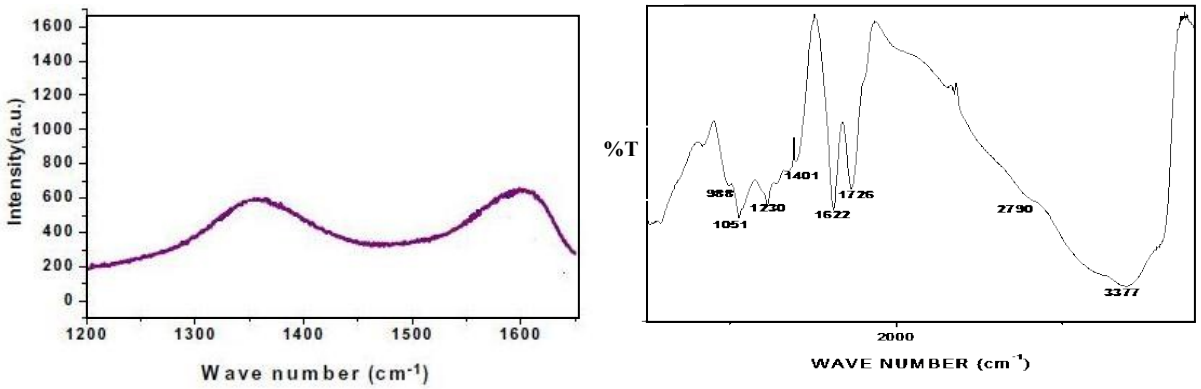

Fig. S1 (a) Raman Spectra of GO (b) FT-IR Spectrum of GO

Fig. S1a shows the Raman spectrum of GO. Two peaks were observed at 1350 cm^{-1} and 1596 cm^{-1}, named as D band and G band, respectively. First one is a disordered band, associated with the reduction in size of the in-plane sp^2 domains, due to extensive oxidation. G band arises as a result of first order scattering related to sp^2 domains due to vibrations of hexagonal lattice of GO and this band near 1600 cm^{-1} is the characteristic of graphene-like

"honeycomb" structure. The FT-IR spectrum indicates the presence of C=O groups in the form of free carboxylic acid and hydrogen bonded carboxylic acid moieties by showing two sharp peaks at 1,726 and 1622 cm^{-1} respectively, due to the weakening of carbonyl bond in the later case (Fig. S1b). A broad peak having a center at ~ 3,380 cm^{-1} is appeared mainly due to the –OH stretching mode of vibration, indicating the presence of numerous surface hydroxyl groups on GO (Fig. S1b).

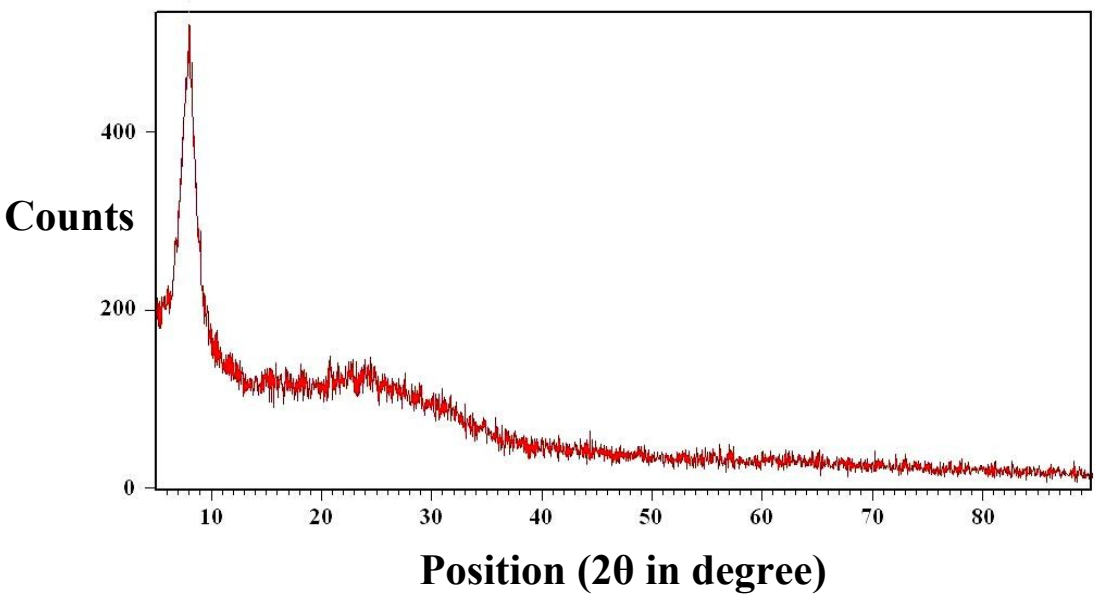

Fig. S1 (c) X-ray diffraction pattern of Graphene Oxide

(peak position - 2θ = 7.9715^0, λ=1.5418 ^{0}A)

XRD data shows that our modified GO exhibits a 001 reflection at 7.97^0 corresponding to interlayer spacing of 1.11 nm (Fig. S1c). This value is higher than interlayer spacing of graphite flakes due to the presence of oxygenated functional groups.

S2: Scanning electron microscopic (SEM) Image:

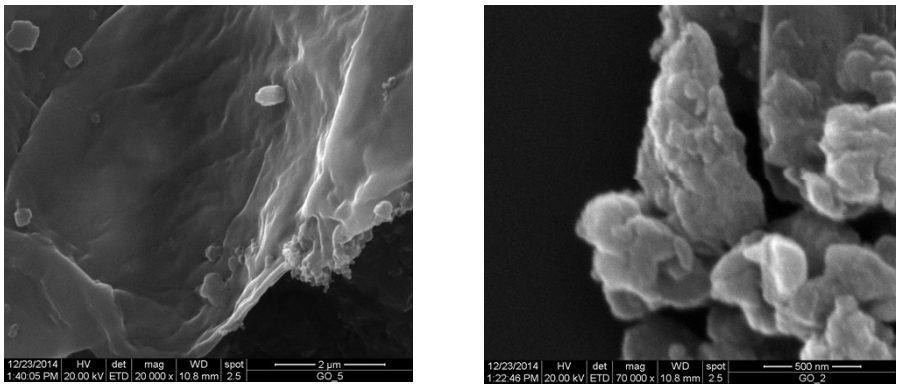

Fig. S2 (a) SEM Image of GO: 2µm (b) SEM micrograph of GO: 500 nm

S3: Tunneling Electron Microscope (TEM) Image:

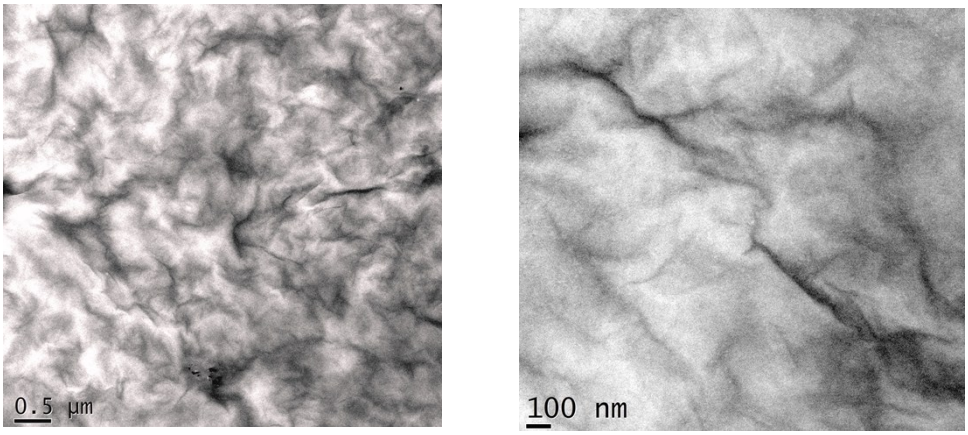

Fig. S3 (a) TEM image of GO: 0.5 µm (b) TEM image of GO: 100 nm

The SEM and TEM images of GO displayed an exfoliated layer of several micrometers, a curled morphology (Fig. S2 and S3).