Supporting Information

Photophysical and Photoconductivity Properties of Thiol Functionalized Graphene-CdSe QD Composites

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Table S1: Decay parameters of 3.80 nm CdSe and CdSe- f-FLG at the excitation wavelength of 375 nm and emission wavelength of 520 nm.

System	τ_1 (ns) (a_1)	τ_2 (ns) (a_2)	τ_3 (ns) (a_3)	$\langle\tau\rangle$ (ns)
Pure CdSe	0.91 (0.538)	8.21 (0.302)	36.54 (0.160)	8.81
CdSe+0.036mg/ml GRO-SH	0.77 (0.568)	7.68 (0.288)	35.59 (0.144)	7.77
CdSe+0.107mg/ml GRO-SH	0.65 (0.618)	6.86 (0.260)	33.9 (0.122)	6.27
CdSe+0.178mg/ml GRO-SH	0.63 (0.645)	6.39 (0.250)	32.46 (0.105)	5.41
CdSe+0.268mg/ml GRO-SH	0.42 (0.780)	5.37 (0.163)	32.31 (0.057)	3.04

Table S2: Decay parameters of 4.70 nm CdSe and CdSe- f-FLG at the excitation wavelength of 375 nm and emission wavelength of 550 nm.

System	τ_1 (ns) (a_1)	τ_2 (ns) (a_2)	τ_3 (ns) (a_3)	$\langle\tau\rangle$ (ns)
Pure CdSe	0.77 (0.585)	7.73 (0.297)	30.85 (0.118)	6.39
CdSe+0.036 mg/ml f-FLG	0.67 (0.568)	7.16 (0.288)	29.57 (0.144)	5.63
CdSe+0.107 mg/ml f-FLG	0.60 (0.640)	6.72 (0.262)	29.19 (0.098)	5.00
CdSe+0.178 mg/ml f-FLG	0.58 (0.698)	6.17 (0.229)	28.49 (0.073)	3.89
CdSe+0.268 mg/ml f-FLG	0.49 (0.764)	5.69 (0.184)	29.20 (0.052)	2.94

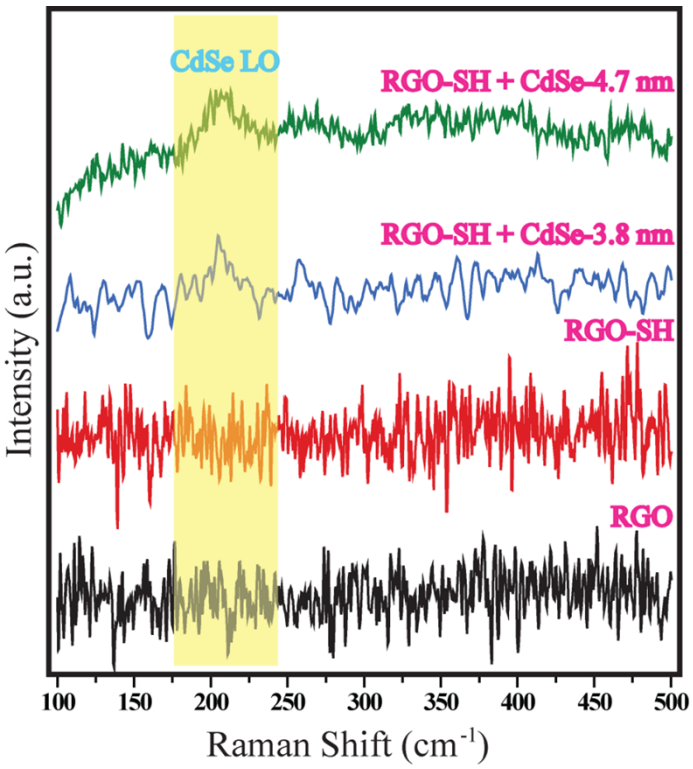

Figure S1: Micro Raman spectra of FLG (RGO), f-FLG (RGO-SH), f-FLG+CdSe-3.8 nm and f-FLG+CdSe-4.7 nm (excitation source 514 nm Ar^+ Laser), showing the enlarged view at the low wavenumber region (100 – 500 cm^{-1}). While f-FLG and FLG spectra are featureless, the other two spectra (with CdSe QDs) bear the feature of CdSe LO phonon mode (arising due to Cd-Se-Cd vibration) in the 200-210 cm^{-1} region. The LO band position shows red-shift with decrease in particle size.

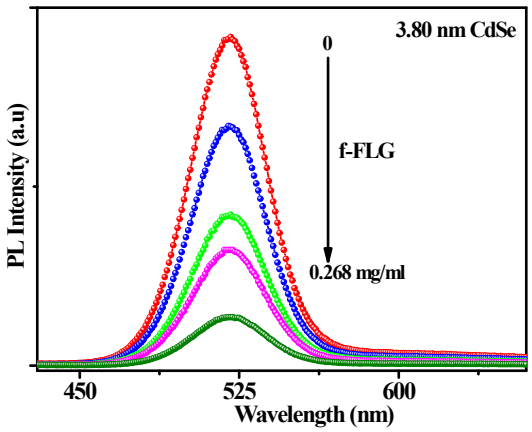

Figure S2: Photoluminescence spectra of 3.80 nm CdSe and CdSe-f-FLG.

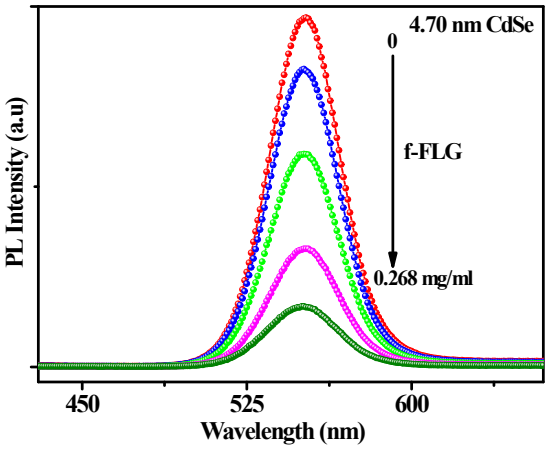

Figure S3: Photoluminescence spectra of 4.70 nm CdSe and CdSe-f-FLG.

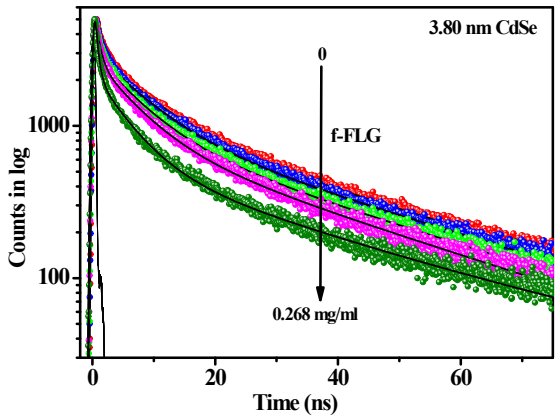

Figure S4: Photoluminescence decay curves of 3.80 nm CdSe and CdSe-f-FLG at the excitation wavelength of 375 nm.

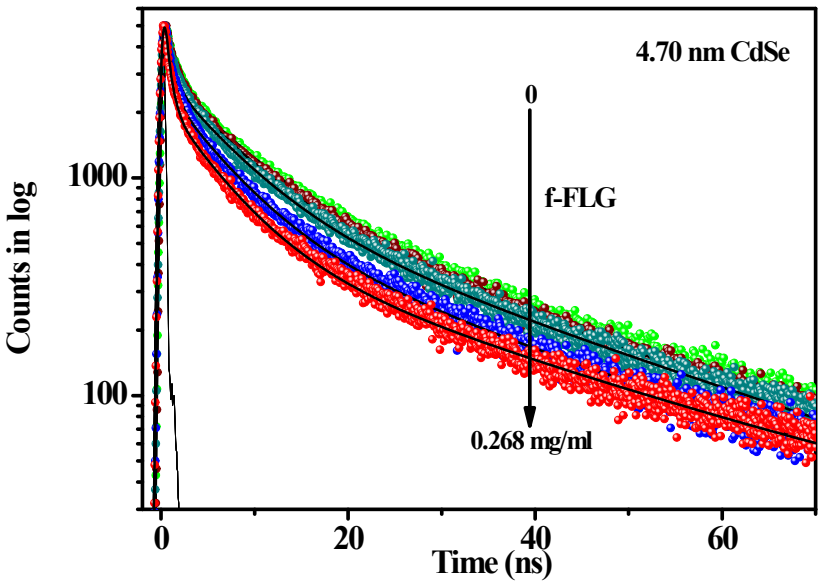

Figure S5: Photoluminescence decay curves of 4.70 nm CdSe and CdSe-f-FLG at the excitation wavelength of 375 nm.

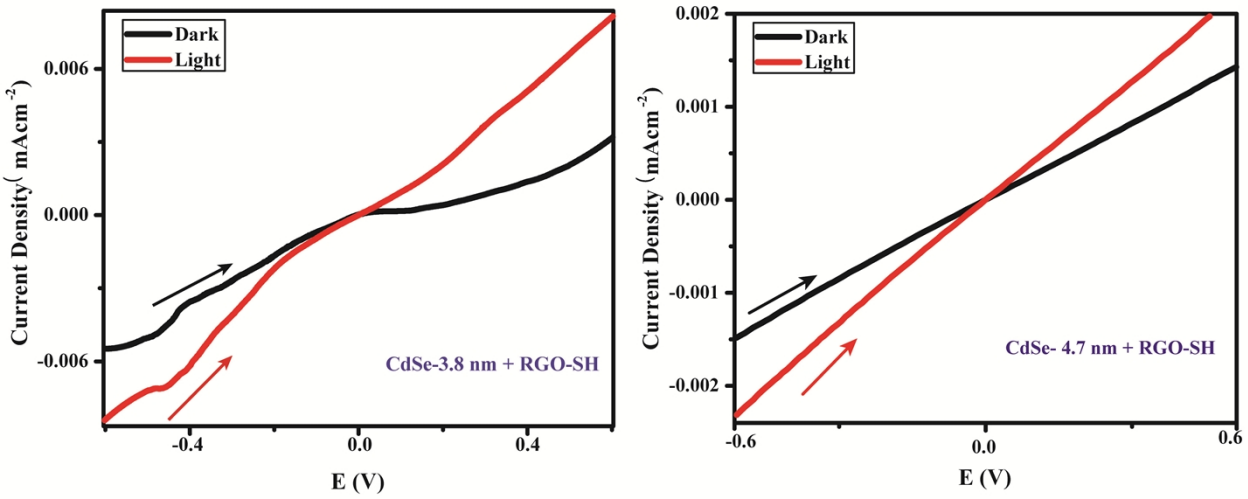

Figure S6: Room temperature Photoconductivity of devices comprising of CdSe (3.8 nm)-f-FLG(SH) and CdSe (4.7 nm) hybrids on FTO coated glass. The device structure as well as the band alignments (not to scale) of the individual component have been shown in the inset. Device area is 0.56 cm^{-2}. Bias is applied to FTO with respect to ITO.