

Supplementary Information

Figure S1. : TEM image and scaled-up views of ultrasmall europium oxide nanoparticles.

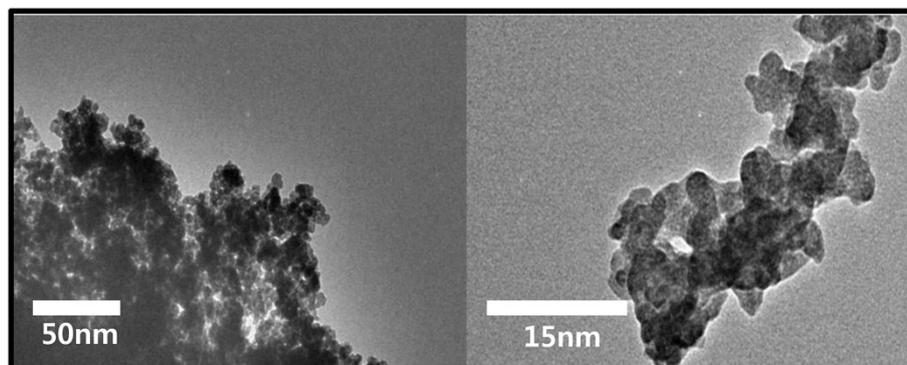


Figure S2. : (a)-(d) O1s XPS spectra of intrinsic EuG composite and annealed samples at 1000 °C with different concentrations of europium: (a) correspond to 0.05 wt%, (b) to 0.5 wt%, (c) to 1 wt%, and (d) to 50 wt%.

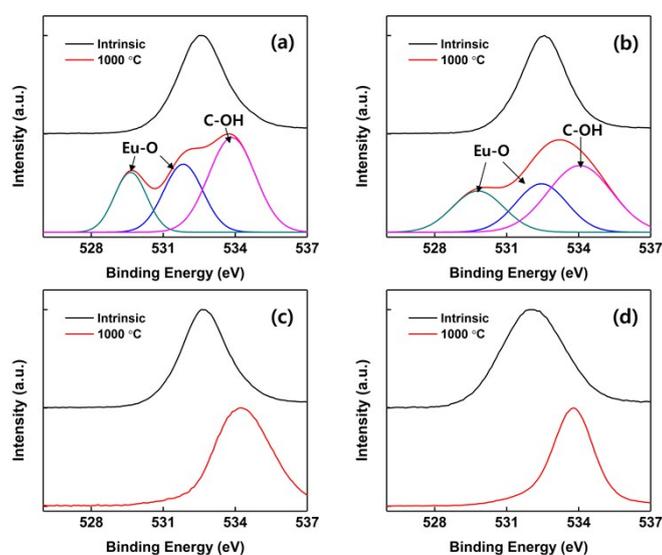


Figure S3. : At 458 nm emission, photoluminescence excitation spectra of (a) 0.05 wt%, (b) 0.5 wt%, (c) 1 wt% and (d) 50 wt% EuG with different temperatures from 400 to 1000 °C.

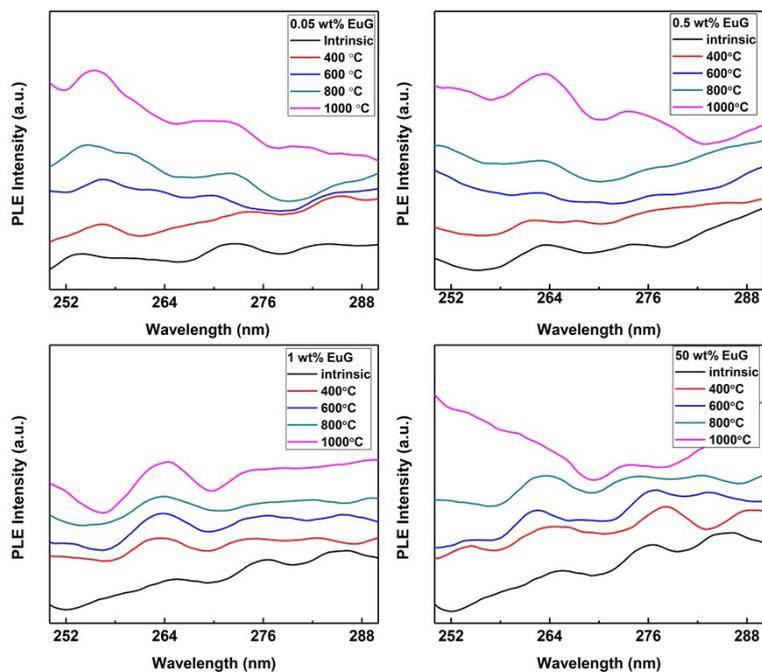


Figure S4. : Photoluminescence emission spectrum of reduced graphene oxide, europium decorated graphene (50 wt% of europium) both of samples annealed until 1000 °C.

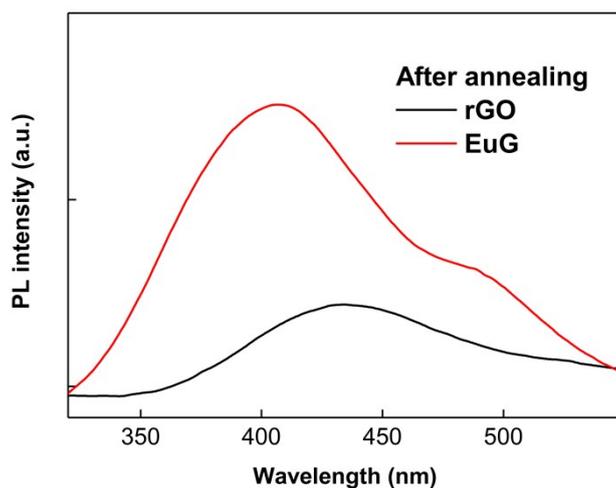


Figure S5. : Linear plots of integrated fluorescence intensity vs. absorbance and the equation for achievement of quantum yield with 0.05 wt% annealed EuG and Norharmane ($\Phi = 0.51$).

Φ is the photoluminescence quantum yield, $Grad$ is the gradient from the plot of integrated fluorescence intensity as a function of absorbance. n is the refractive index of the solvent containing sample.

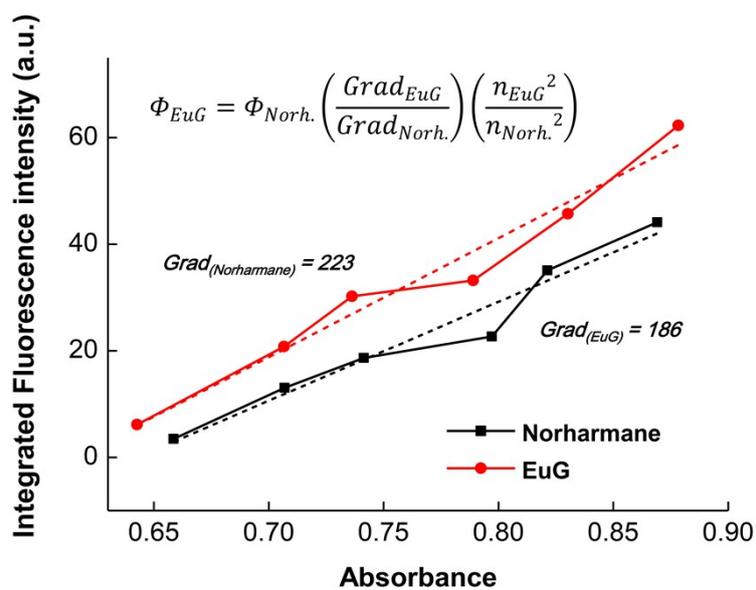


Figure S6. : (a)-(c) Microscope and (d)-(f) fluorescence images with mercury UV lamp: (a) and (d) correspond to GO, (b) and (e) to reduced GO, (c) and (f) to europium oxide crystal.

