Electronic Supplementary Material (ESI) for Nanoscale.

Supporting Information

Preparation and characterization of multistimuli-responsive photoluminescent nanocomposites of graphene quantum dots with hyperbranched polyethylenimine derivatives

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Table S1. Results of elemental analysis on GQD-PEI

Feed ratio of PEI/OGS	Elemental analysis of GQD-PEI (%)				H content of graphene [a] (%)	C content of graphene [b] (%)
	C	H	N	O		
0.3	23.94	7.00	12.75	56.31	2.45	2.08
1.0	30.36	9.55	14.62	45.47	4.33	5.29
5.0	48.75	11.55	26.02	13.68	2.26	4.14

[a] Weight percentage of the protons of GQD moiety in GQD-PEI. [b] Weight percentage of the carbons of GQD moiety in GQD-PEI.

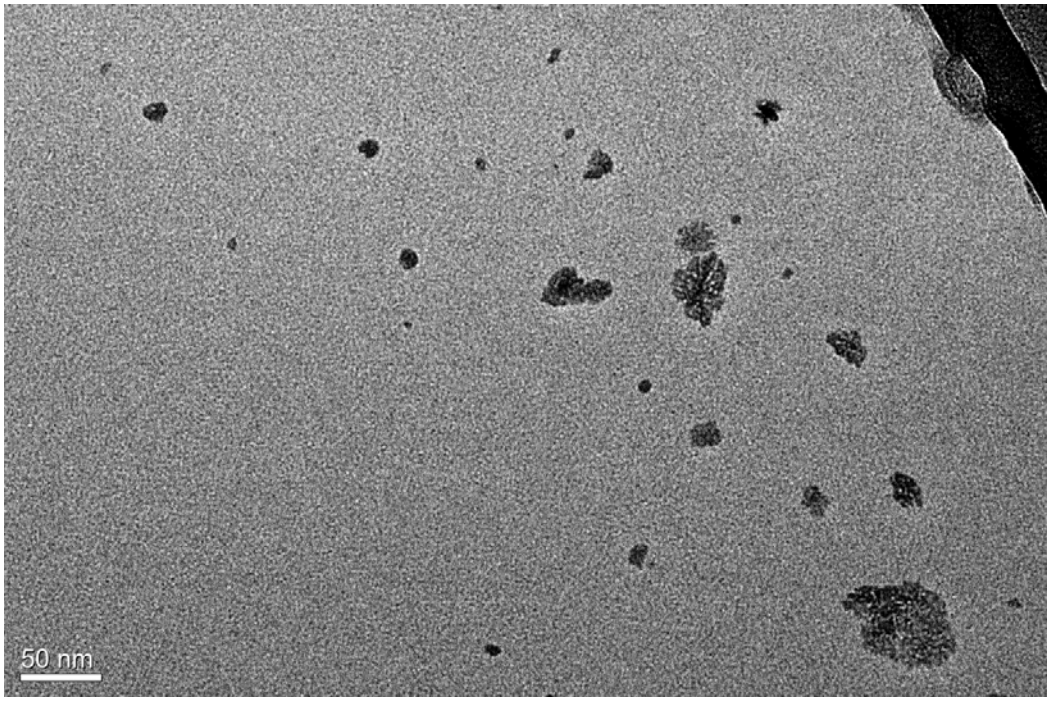

Figure S1. Typical TEM image of GQD-PEI prepared at high PEI/OGS ratio (GQD3)

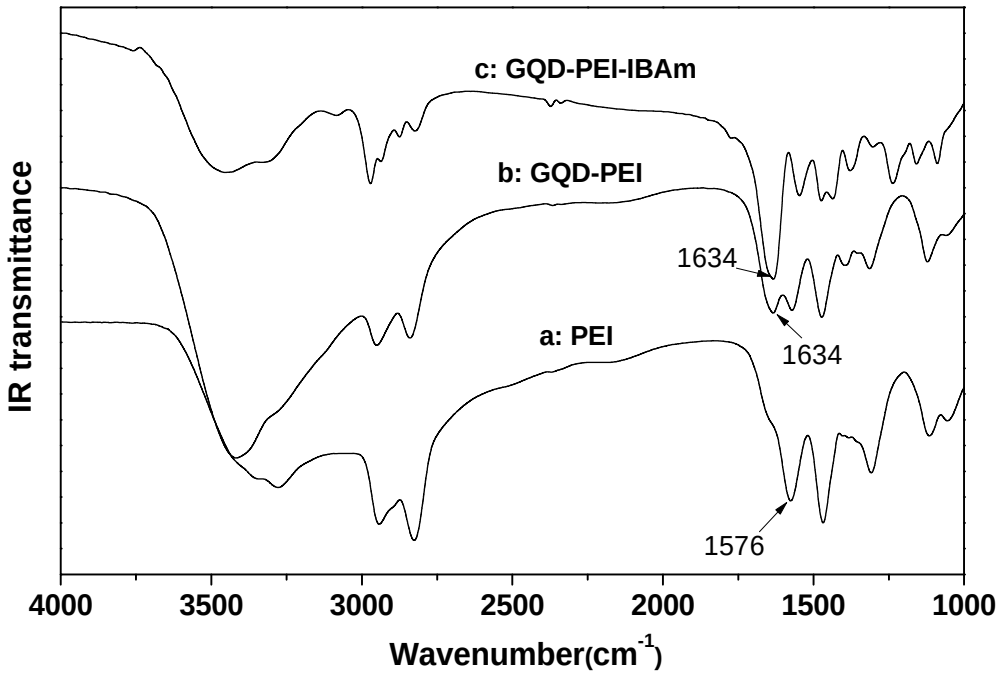

Figure S2. The typical FTIR spectra of (A) PEI, (B) GQD-PEI (GQD3) and (C) GQD-PEI-IBAm (T-GQD3)

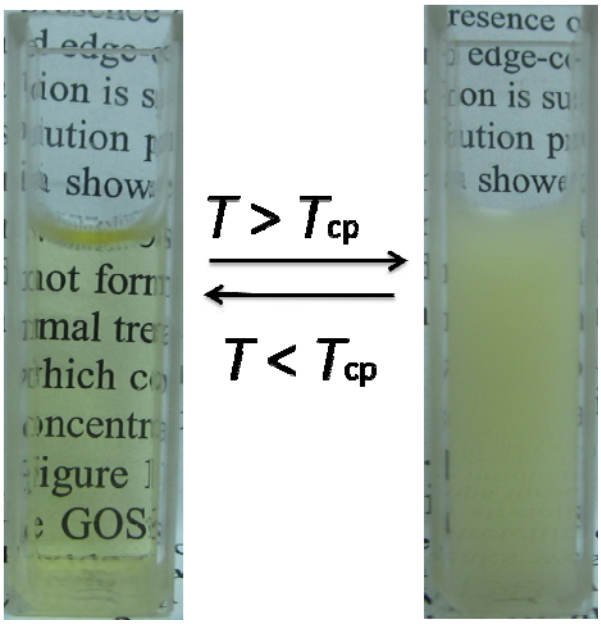

Figure S3. The typical photographs of the aqueous solution of GQD-PEI-IBAm below and above the phase transition temperature (T-GQD3 as the representative)

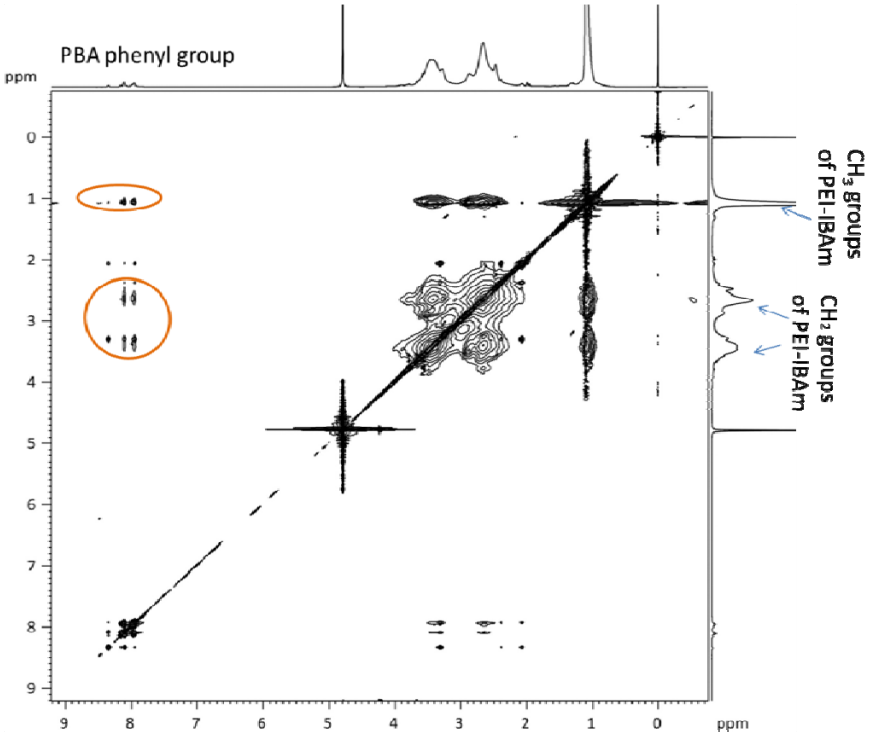

Figure S4. The typical 2D NOESY ^{1}H NMR spectrum of supramolecular complex of PEI-IBAm with PBA in D_2O

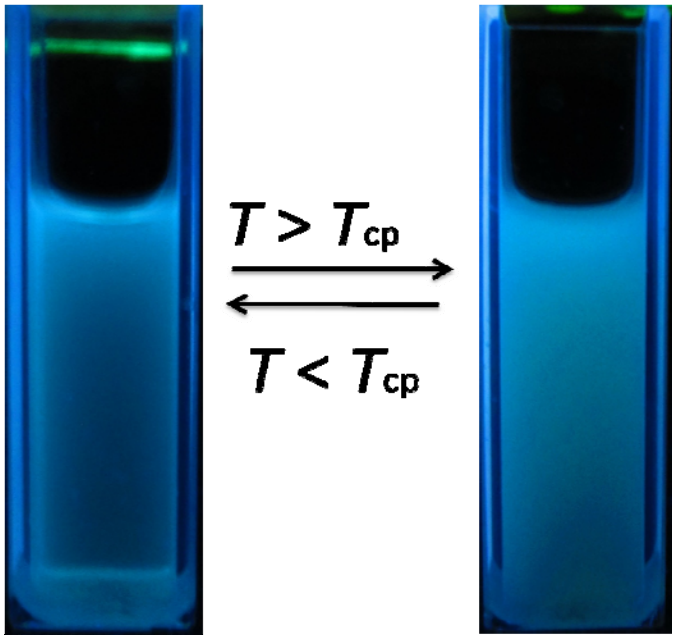

Figure S5. The typical luminescent photographs of T-GQD below and above the phase transition temperature (T-GQD3 as the representative)

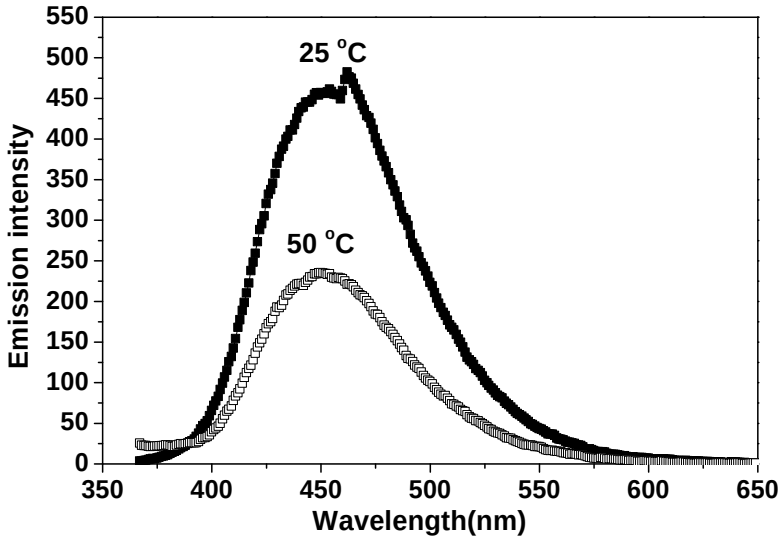

Figure S6. The typical emission spectra of GQD3 at room temperature (25 ^{o}C) and 50 ^{o}C (concentration of GQD3 is 6 mg/mL)

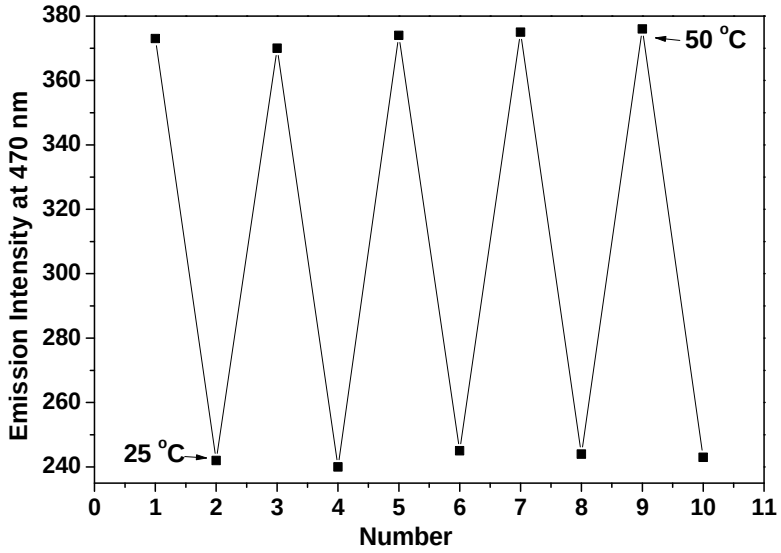

Figure S7. The effect of heating–cooling cycle on the reversibility of the emission intensity of T-GQD3 at room temperature (25 ^{o}C) and 50 ^{o}C (concentration of T-GQD3 is 12 mg/mL; excitation wavelength is 350 nm)