Supporting information

Synthesis of a novel Graphene-based gold nanocomposite using PVEIM-b-PNIPAM as stabilizers and Its thermosensitivity for catalytic reduction of 4-nitrophenol

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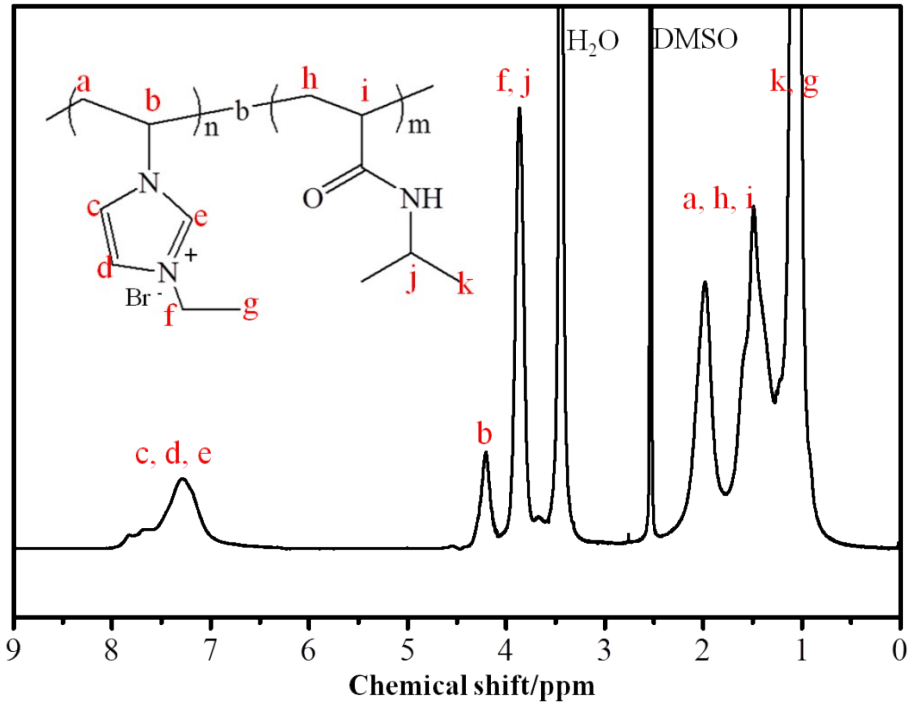

Figure (S1) [1] H NMR of PVEIM-b-PNIPAM

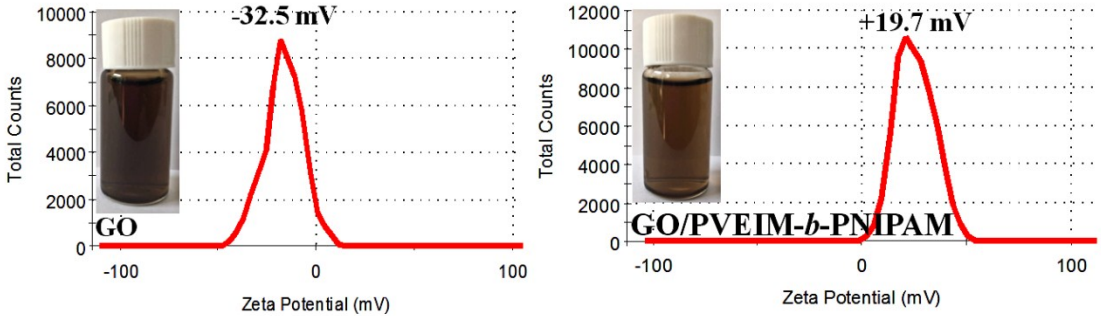

Figure (S2) Zeta potentials and dispersibility of (a) GO and (b) GO/PVEIM-b-PNIPAM in water

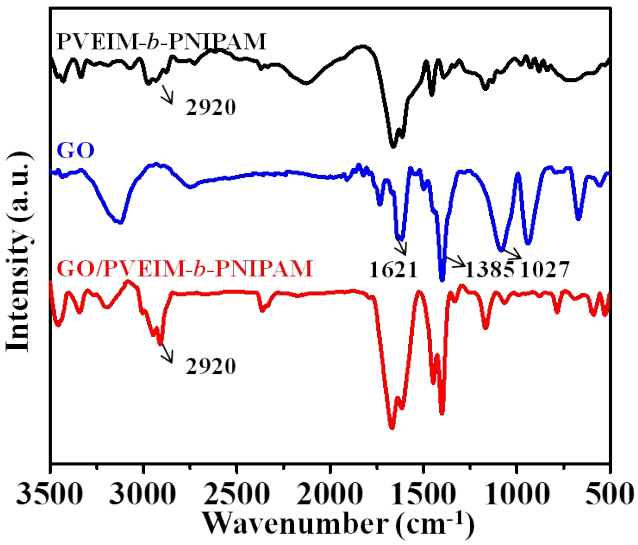

Figure (S3) FTIR of PVEIM-b-PNIPAM, GO, and GO/PVEIM-b-PNIPAM. Figure S3 shows that the characteristic vibrations that are attributable to GO at C-O (1027 cm^{-1}), C-O (1385 cm^{-1}), and C=C (1621 cm^{-1}) are evident in the FTIR spectra of the GO, and the appearance of the new C-H peak at 2920 cm^{-1} in GO/PVEIM-b-PNIPAM is attributable to the bound PVEIM-b-PNIPAM, suggesting the occurred decoration of PVEIM-b-PNIPAM on GO nanosheets.

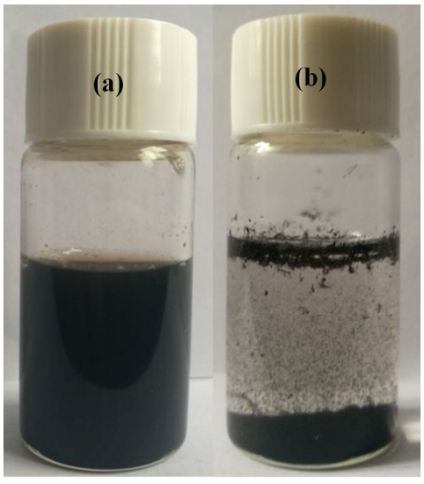

Figure (S4) Dispersibility of (a) RGO/PVEIM-b-PNIPAM/GNP and (b) RGO/GNP in water

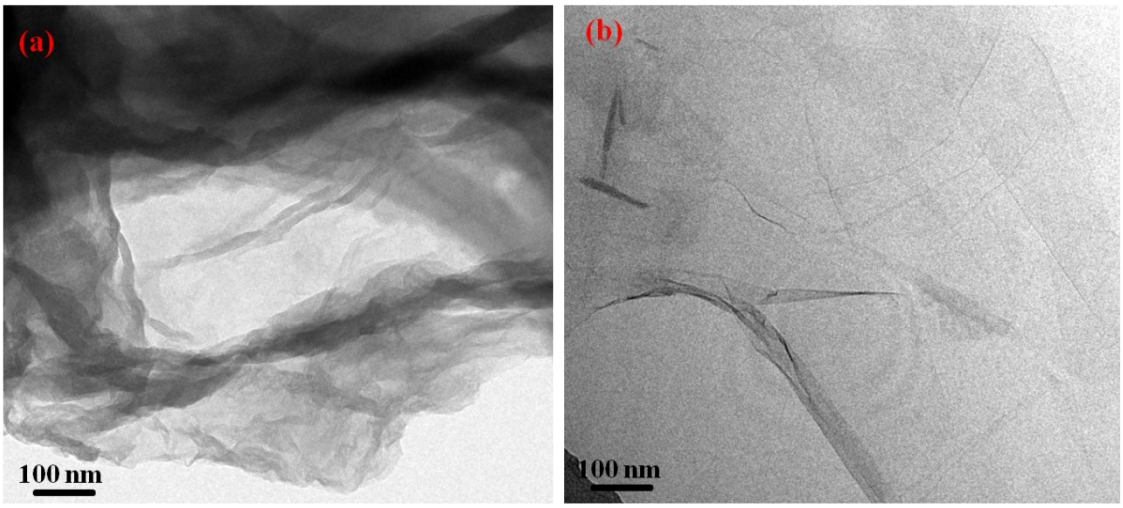

Figure (S5) TEM images of (a) RGO and (b) GO

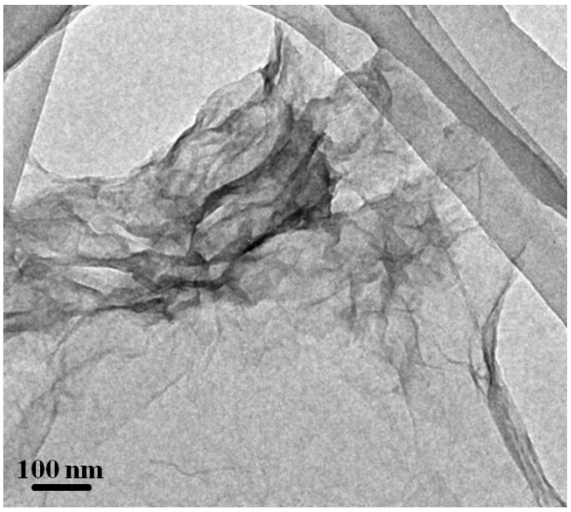

Figure (S6) TEM image of RGO/PVEIM-b-PNIPAM

Table (S1) Binding energies and atomic ratios for various elements in RGO/PVEIM-b-PNIPAM/GNP by XPS

Sample	C1s		N1s		O1s		Au4f	
	BE (eV)	Atom %[a]	BE (eV)	Atom %[a]	BE (eV)	Atom %[a]	BE (eV)	Atom %[a]
RGO/PVEIM-b-PNIPAM/GNP	284.79	71.78	399.61	9.89	531.71	17.49	83.11	0.84

[a] The atomic percent (atom %) of each element was determined using XPS high-resolution data and normalization by the following sensitivity factors (RSF).

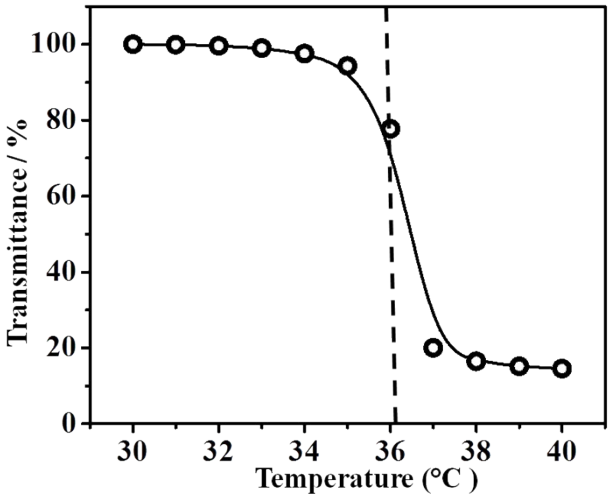

Figure (S7) Temperature dependent optical transmittances of the PVEIM-b-PNIPAM aqueous solution (10 mg/mL) at 500 nm

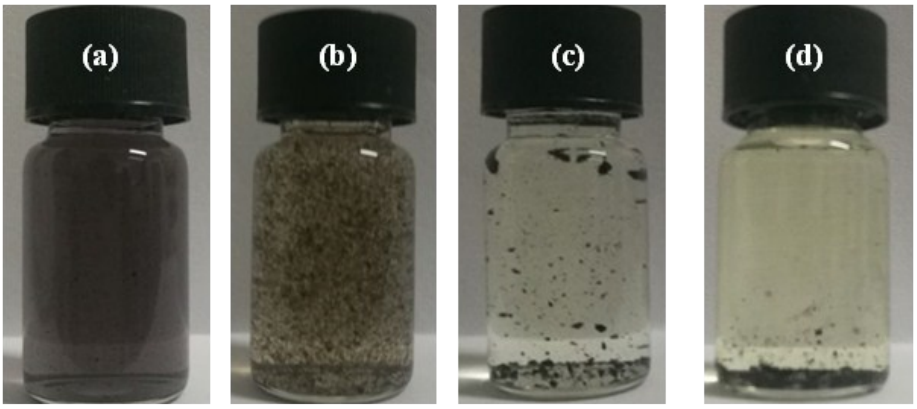

Figure (S8) The status of the RGO/PVEIM-b-PNIPAM/GNP in the 4-NP solution when the temperature increases from room temperature to 34 °C (a), 36 °C (b), 38 °C (c) and 40 °C (d) respectively

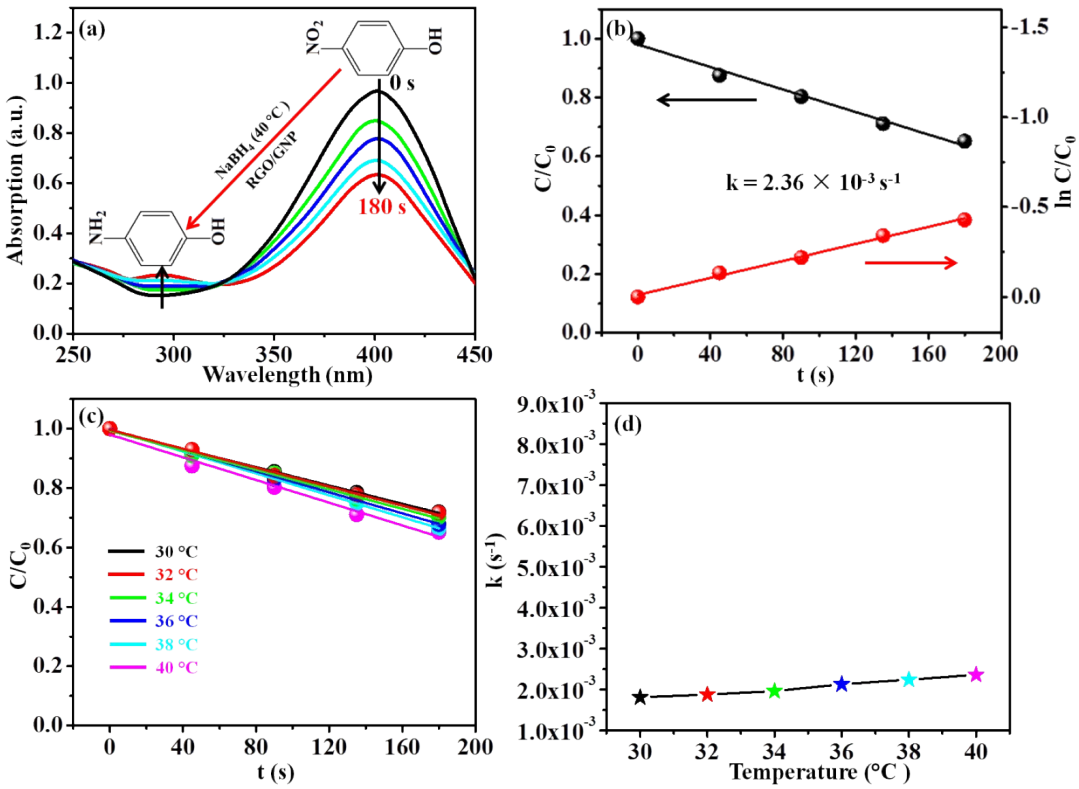

Figure (S9) (a) UV-Vis of the reduction for 4-NP and (b) the curves of C/C_0 and $\ln(C/C_0)$ versus reaction time in presence of RGO/GNP at 40 °C; (c) Curves of C/C_0 versus reaction time and (d) the rate constant k in presence of RGO/GNP at different temperature