Electronic Supplementary Information for

Terpyridine-Functionalized Stimuli-Responsive Microgels and Their Assembly Through Metal-Ligand Interaction

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Contents:

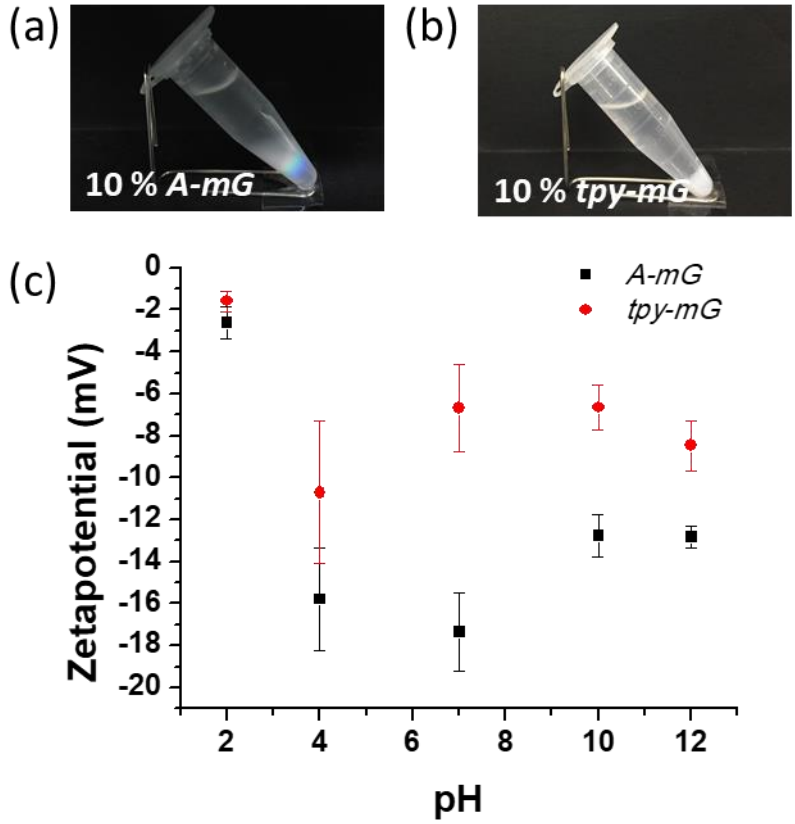

Fig S1. (a, b) Pictures of centrifuged samples of (a) **10% A-mG** and (b) **10% tpy-mG**. (c) Zeta potentials of **A-mG** and **tpy-mG** (0.0005 wt%) as a function of pH.

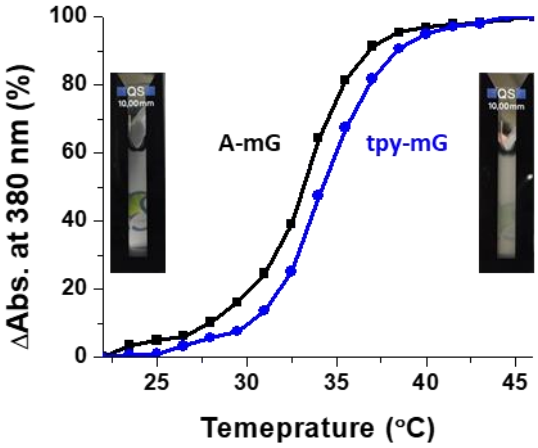

Fig S2. The absorbance changes of the dispersed solutions of **A-mG** and **tpy-mG** (농도, 용매) as the temperature increased. The clear solution changed to turbid at higher temperature due to volume phase transition of pNIPAM.

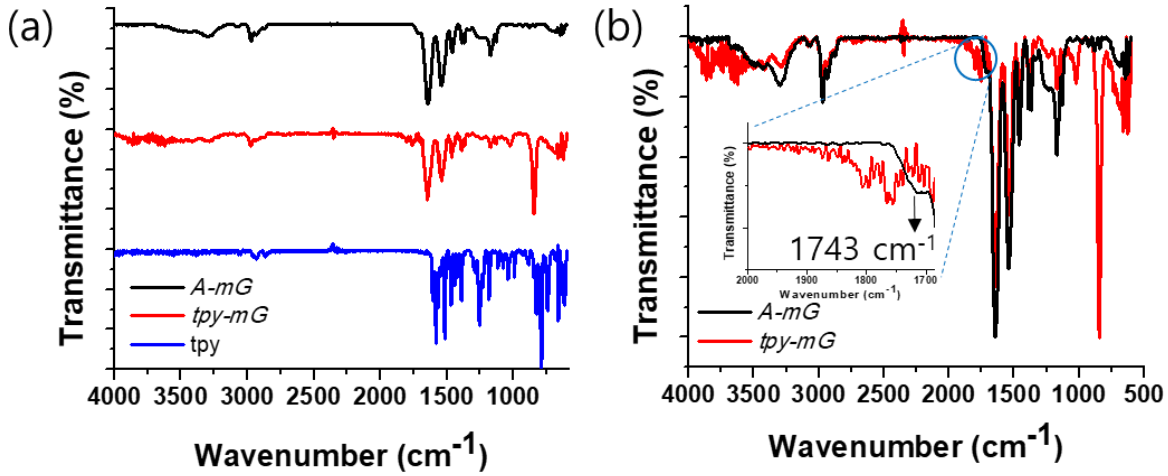

Fig S3. (a) FT-IR spectra of **A-mG**, **tpy-mG**, and 3-(4-([2,2':6',2"-terpyridin]-4'-yl)phenoxy)propan-1-amine (**tpy**). (b) Comparison of FT-IR spectra of **A-mG** and **tpy-mG.** For **tpy-mG**, the peak at 1743 cm^{-1} which is assigned to the stretching of carboxylic groups in **A-mG**, disappeared up on amidation.

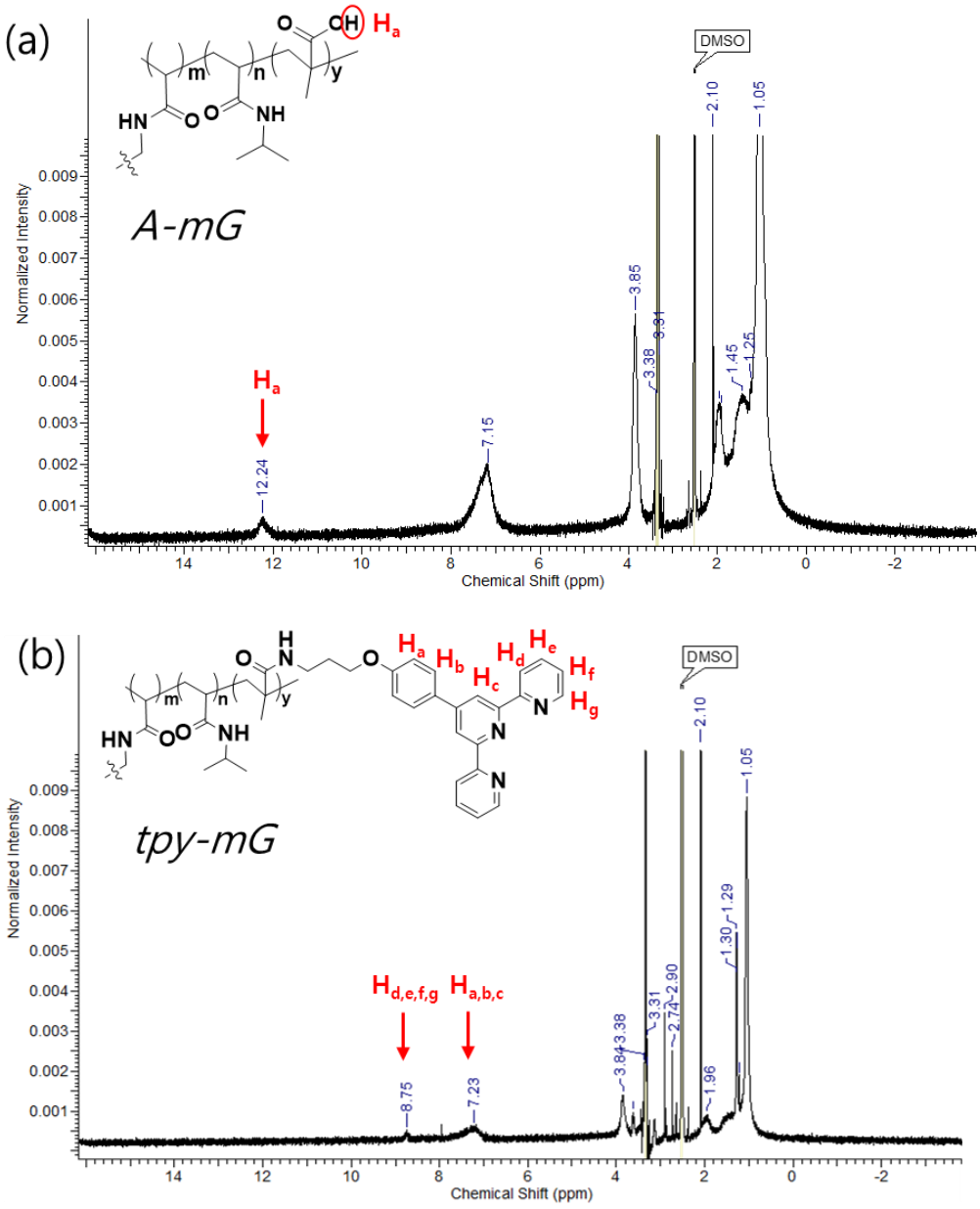

Fig S4. ^{1}H-NMR spectra of (a) **A-mG** and (b) **tpy-mG**.

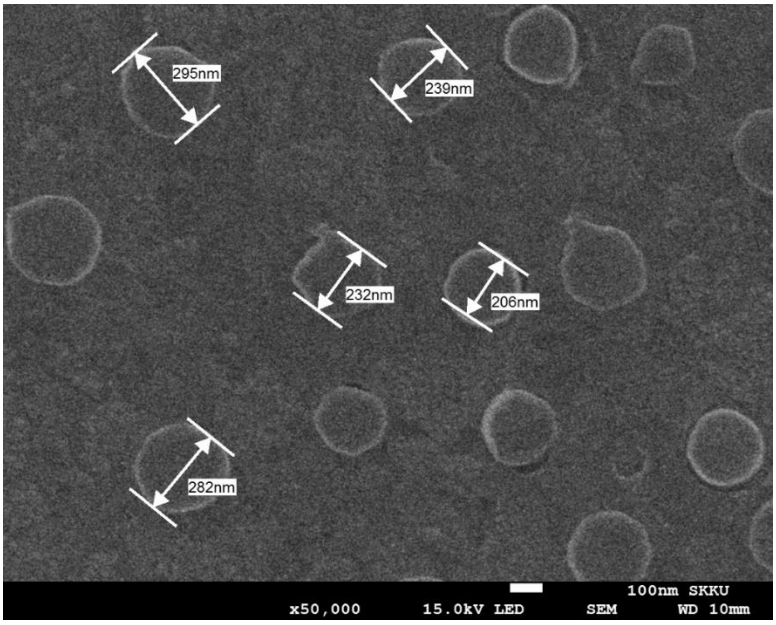

Fig S5. Size distribution analysis of **tpy-mG** with the SEM image. The average particle size was 250.8 nm when a drop of the dispersed **tpy-mG** (0.0005 wt %) was placed on a glass substrate and dried under vacuum.

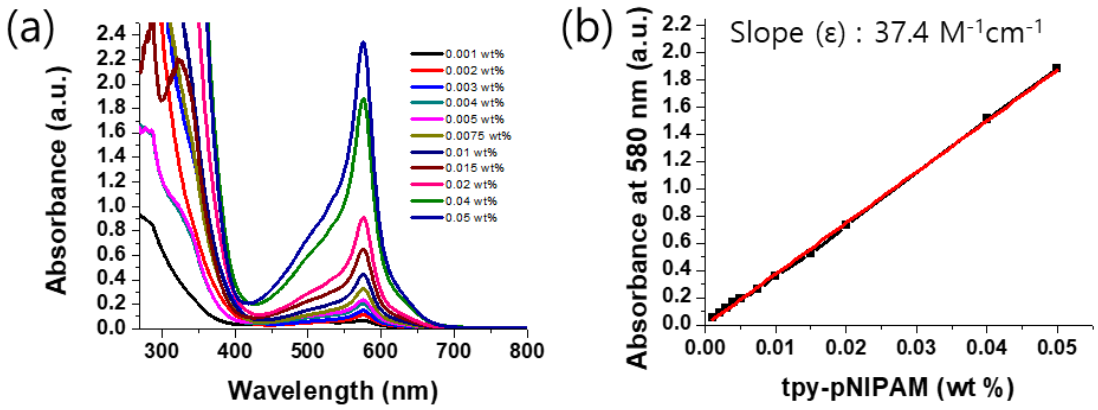

Fig S6. (a) UV-vis spectra of **tpy-mG** in addition of Fe^{2+} ion for estimating the functionalization amount of tpy in **tpy-mG** through the MLCT band (~580 nm) of $Fe(tpy)_2^{2+}$. (b) The calibration curve for the functionalization amount of tpy per **tpy-mG** in weight percent.

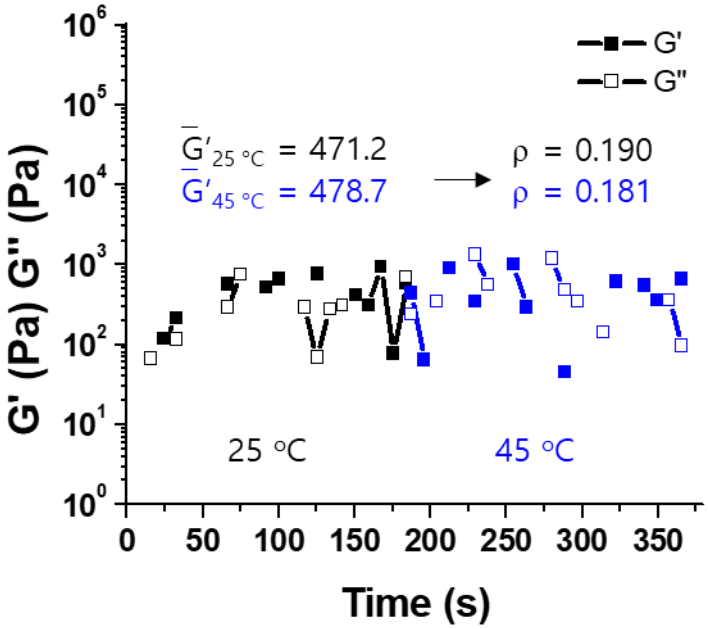

Fig S7. The storage (G') and loss (G") modulus of **tpy-mG** (20 mg/mL) at 25°C and 45°C and calculated crosslinking density at each temperature.

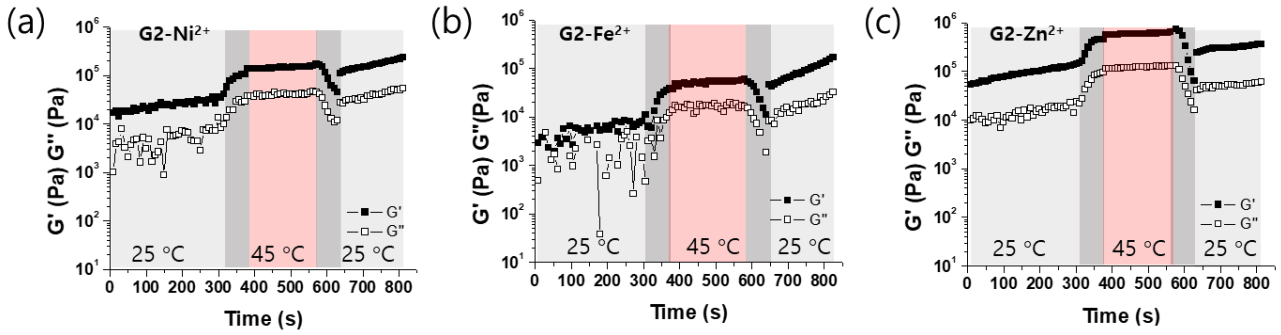

Fig S8. The storage (G') and loss (G") modulus of (a) **tpy-mG**-Ni^{2+}, (b) **tpy-mG**-Fe^{2+}, and (c) **tpy-mG**-$Zn^{2+}$with temperature changes. G' and G" increased at the temperature above VPTT, and recovered after cooling.

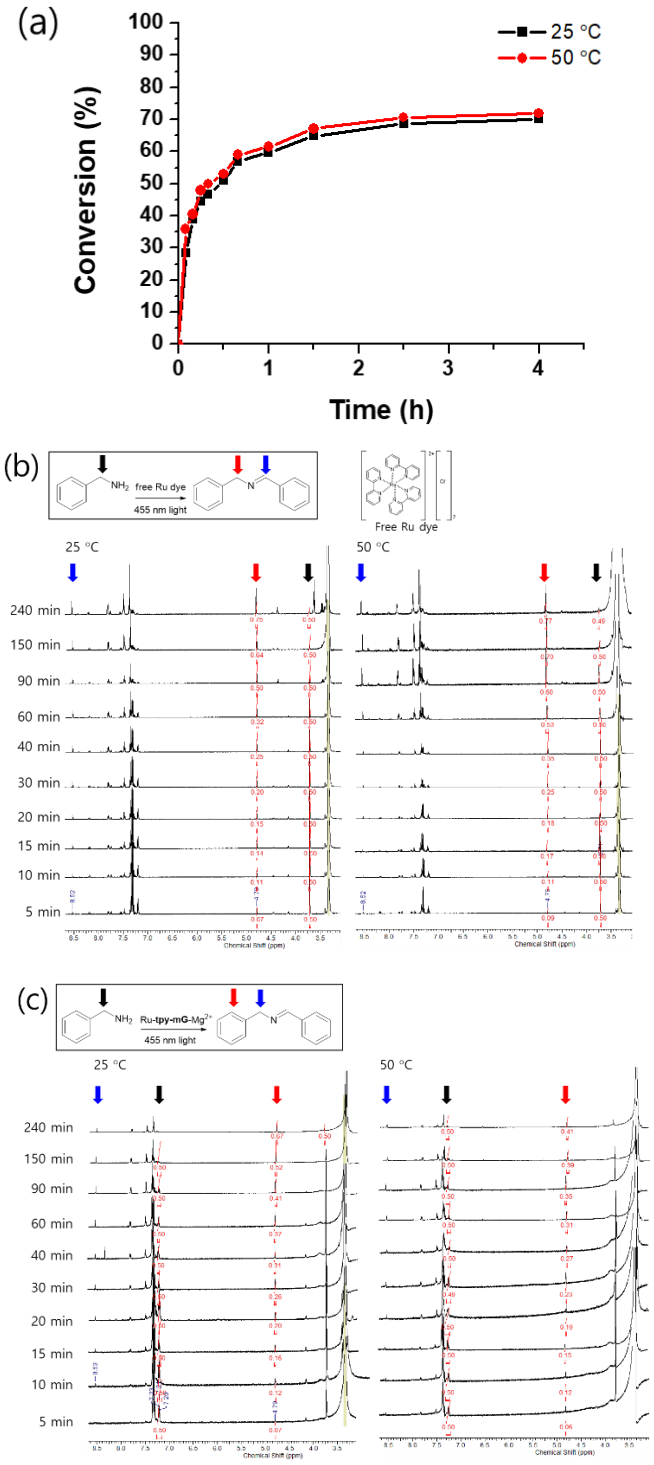

Fig S9. (a) Reaction conversion of benzylamine to imine using free Ru dye in the absence of **tpy-mG** microgels at different temperatures (25 and 50 °C). (b, c) ^{1}H-NMR spectra for photocatalytic coversion of benzylamine to imine using 5mol % Ru dye (relative to the amount of benzylamine) without **tpy-mG** microgels (b) and Ru-**tpy-mG**-Mg^{2+} system (c) at 25 and 50 °C.