Supporting information

For

Mussel-inspired thermoresponsive polymers with tunable LCST by Cu(0)-LRP for the construction of smart TiO_2 nanocomposites

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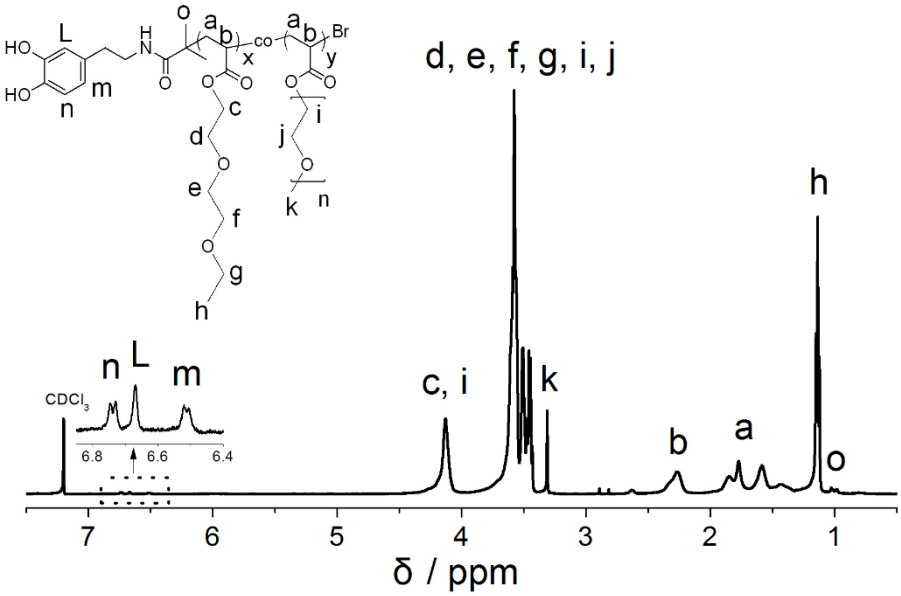

Fig. S1. ^{1}H NMR spectrum of poly(DEGEEA)-*r*-(PEGA$_{480}$) in D_2O.

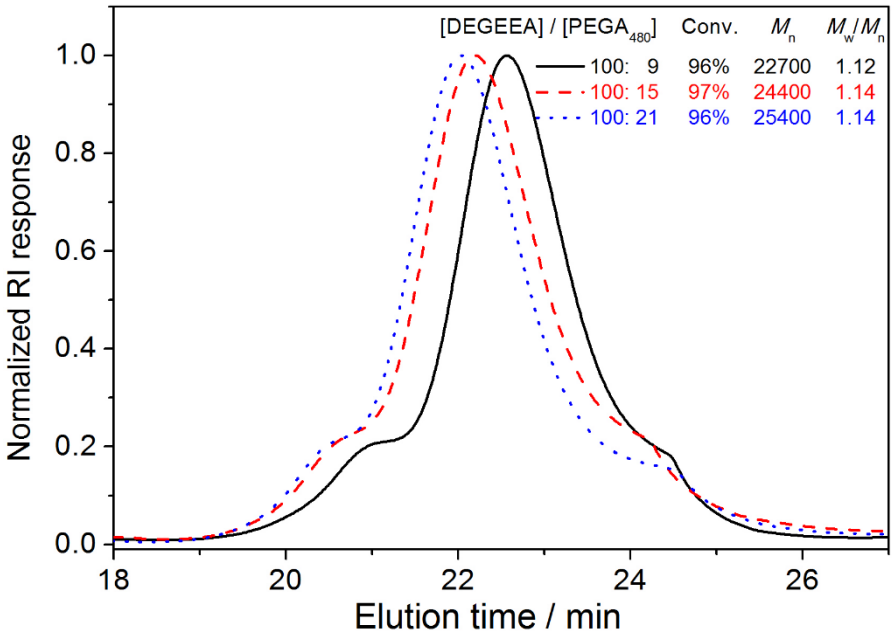

Fig. S2. Molecular weight distributions of poly(DEGEEA)-*r*-(PEGA$_{480}$) synthesized *via* aqueous Cu(0)-LRP as measured by SEC.

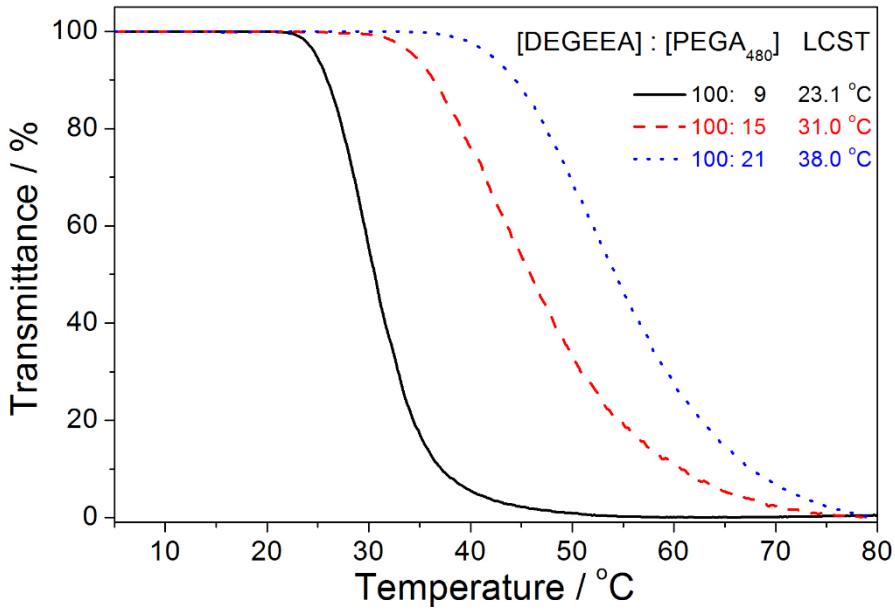

Fig. S3. Temperature dependence of optical transmittance at 500 nm obtained for 1 mg/mL aqueous solutions of poly(DEGEEA)-*r*-($PEGA_{480}$) (the LCST was defined as the temperature corresponding to 1% decrease of transmittance).

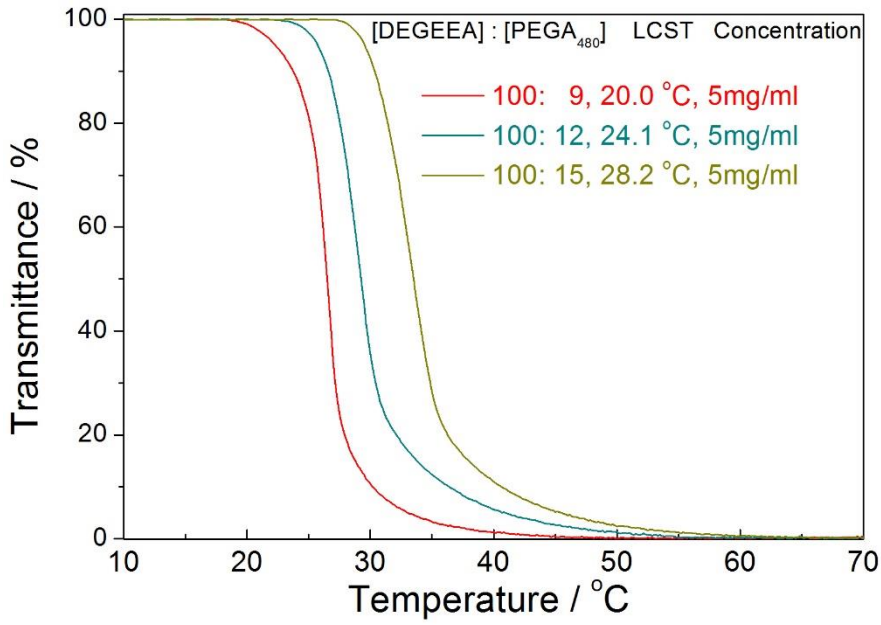

Fig. S4. Temperature dependence of optical transmittance at 500 nm obtained for 5 mg/mL aqueous solutions of poly(DEGEEA)-*r*-($PEGA_{480}$) (the LCST was defined as the temperature corresponding to 1% decrease of transmittance).

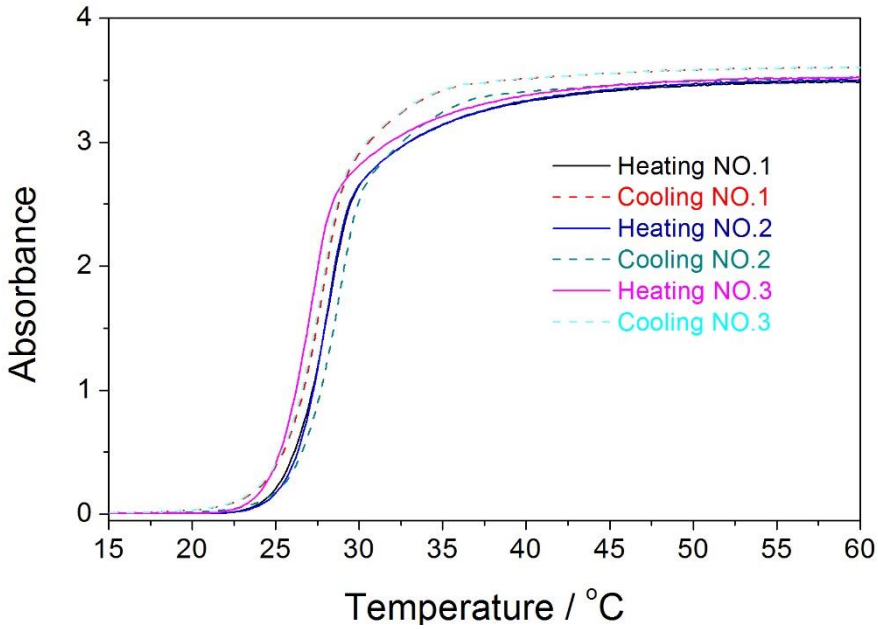

Fig. S5. Transmittance-temperature curves during heating (solid lines) and cooling (dashed lines) of the solution (5 mg/mL) of Poly(DEGEEA)-*r*-(PEGA$_{480}$) copolymer (R_{co}= 0.12) obtained by UV/Vis spectroscopy at 500nm.

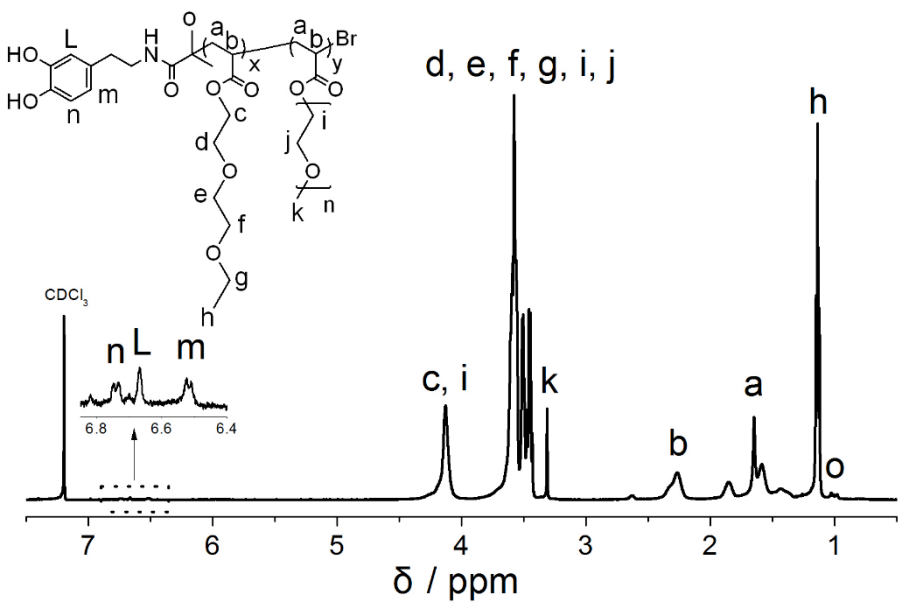

Fig. S6. ^{1}H NMR spectrum of poly(DEGEEA)-*b*-(PEGA$_{480}$) in D_2O.

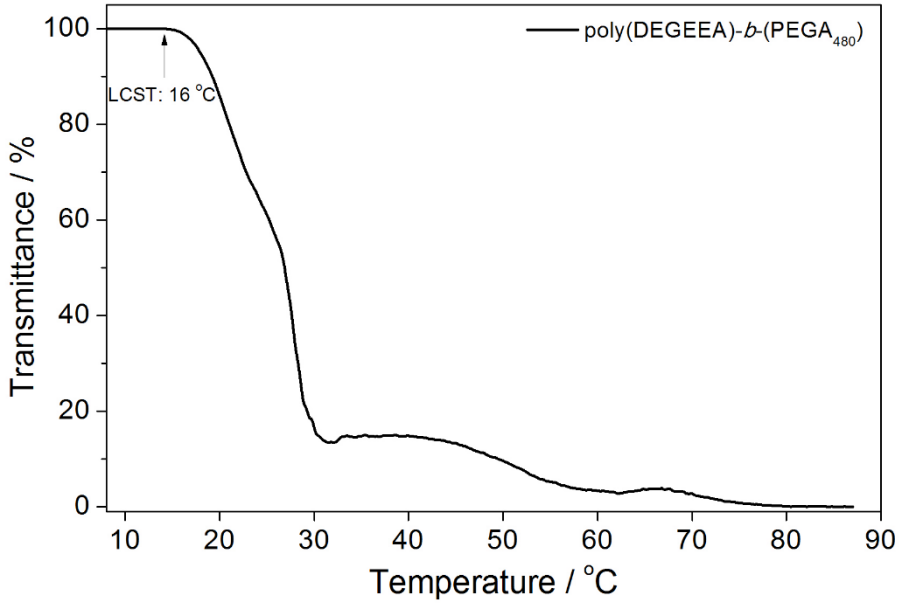

Fig. S7. Temperature dependence of optical transmittance at 500 nm obtained for 1 mg/mL aqueous solutions of poly(DEGEEA)-*b*-($PEGA_{480}$) (the LCST was defined as the temperature corresponding to 1% decrease of transmittance).

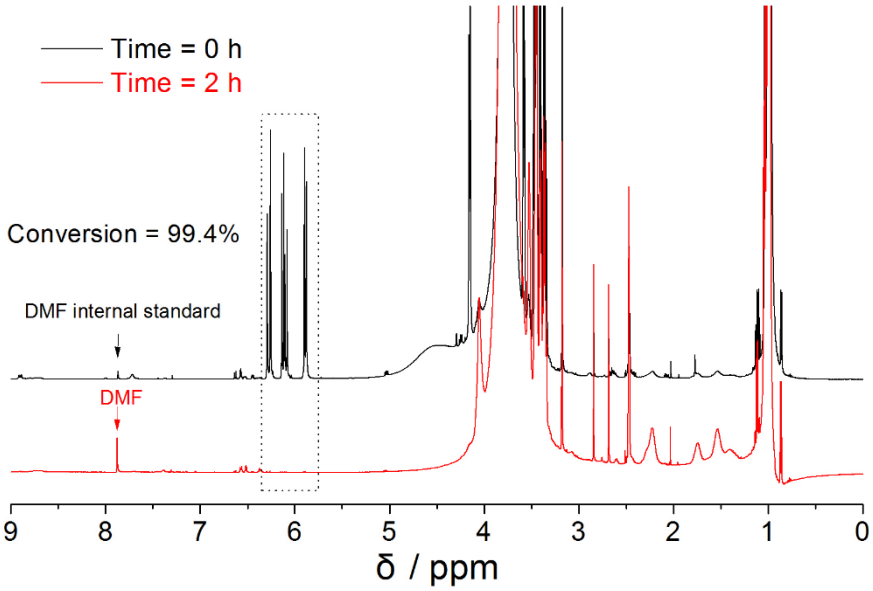

Fig. S8. ^{1}H NMR spectra for a one-pot Cu(0)-LRP of DEGEEA/$PEGA_{480}$ in the presence of TiO_2 at 0 & 2 hours in D_2O.

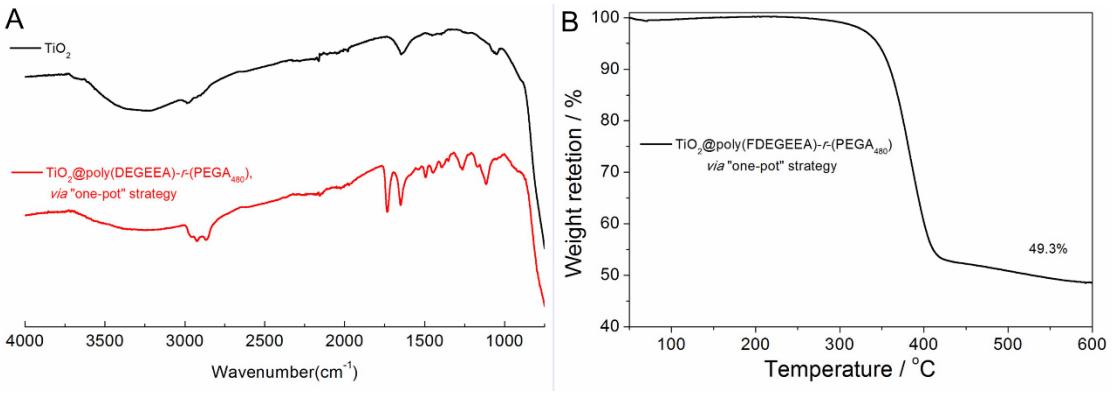

Fig. S9. FTIR (**A**) and TGA (**B**) spectra for TiO_2@poly(DEGEEA)-*r*-($PEGA_{480}$) obtained by one-pot Cu(0)-LRP.

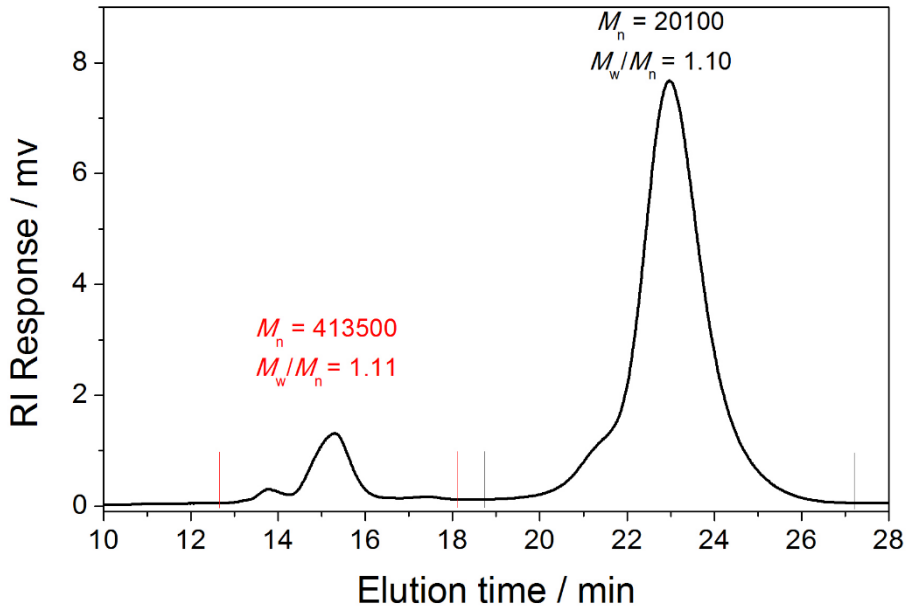

Fig. S10. Molecular weight distributions of free linear copolymers synthesized *via* a "one-pot" Cu(0)-LRP in the presence of TiO_2 as measured by SEC.