Supplementary Materials of the Manuscript

Water Soluble Stimuli-responsive Star Copolymers with Multiple Encapsulation and Release Properties

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Fig. S1 $^1$H NMR spectrum of 3-arm star initiator (TIBB) in CDCl$_3$ along with their peak assignments.
Fig. S2 $^1$H NMR spectrum of 3-arm block copolymer ($P_1$) in CDCl$_3$ along with their peak assignments (here B means block copolymer)
**Fig. S3** GPC traces of (a) 3-arm-p(DEGMA$_{33}$-R-DMAEMA$_{23}$) ($P_2$) copolymer (b) 3-arm-p(DEGMA)$_3$-Cl$_3$ macro-initiator and 3-arm-p(DEGMA$_{34}$-B-DMAEMA$_{21}$) ($P_1$) copolymer in DMF
Fig. S4 Z average size vs. temperature plot of P₁ block copolymer containing 17 µM ANS at different pH obtained from DLS study in aqueous solution (0.4% w/v).
Fig. S5 PL intensity vs wavelength plot of pure ANS in aqueous medium and ANS in presence $P_3$ copolymer solution (0.4 % w/v).
**Fig. S6** (a) PL intensity vs wavelength plot of P$_2$ copolymer solution (0.4 % w/v) containing 17 µM ANS with increasing temperature at pH-9.2. (b) PL intensity vs wavelength plot of P$_3$ copolymer solution (0.4 % w/v) containing 17 µM Nile red with increasing temperature at pH-9.2.
Fig. S7 (a) PL-Intensity vs wavelength plot of $\text{P}_1$ copolymer solution (0.4 % w/v) with increasing temperature at pH-9.2. (b) Intensity vs temperature plot of $\text{P}_1$ copolymer solution (0.4 % w/v) at pH-9.2 with increasing temperature.
Fig. S8 Z average size vs temperature plot of aqueous solution P₄ copolymer with variation of pH
Fig. S9 The bar diagram of zeta potential values arising from the surface charge of $P_1$, $P_2$ and $P_5$ copolymers