

Supplementary Materials of the Manuscript

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

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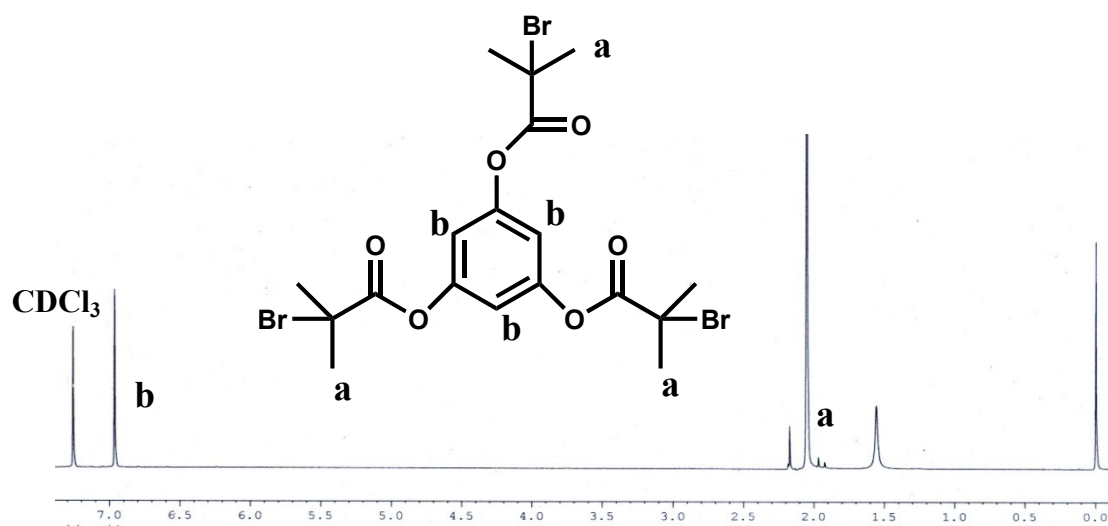


Fig. S1 ¹H NMR spectrum of 3-arm star initiator (TIBB) in CDCl₃ along with their peak assignments.

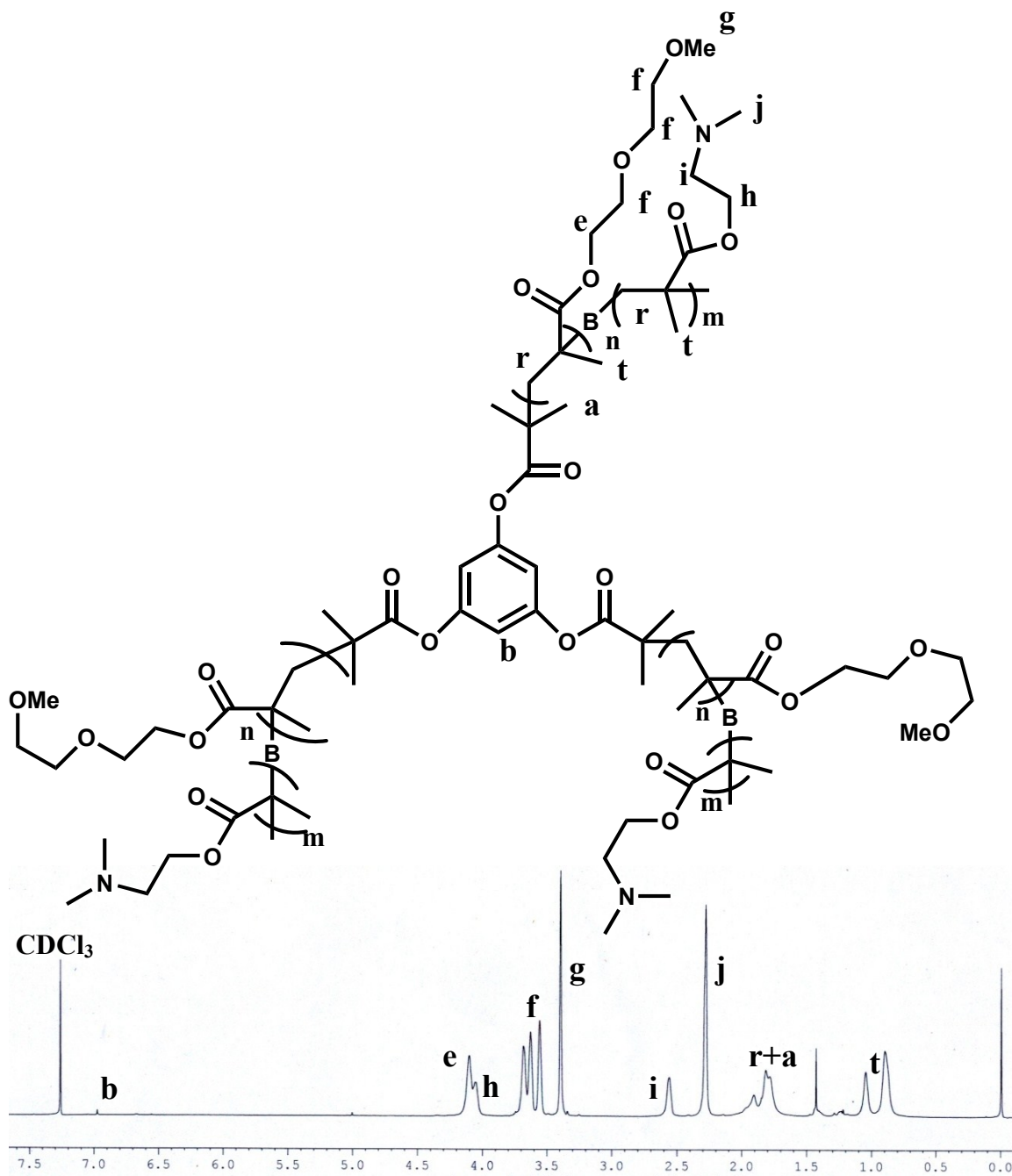


Fig. S2 ^1H NMR spectrum of 3-arm block copolymer (P_1) in CDCl_3 along with their peak assignments (here B means block copolymer)

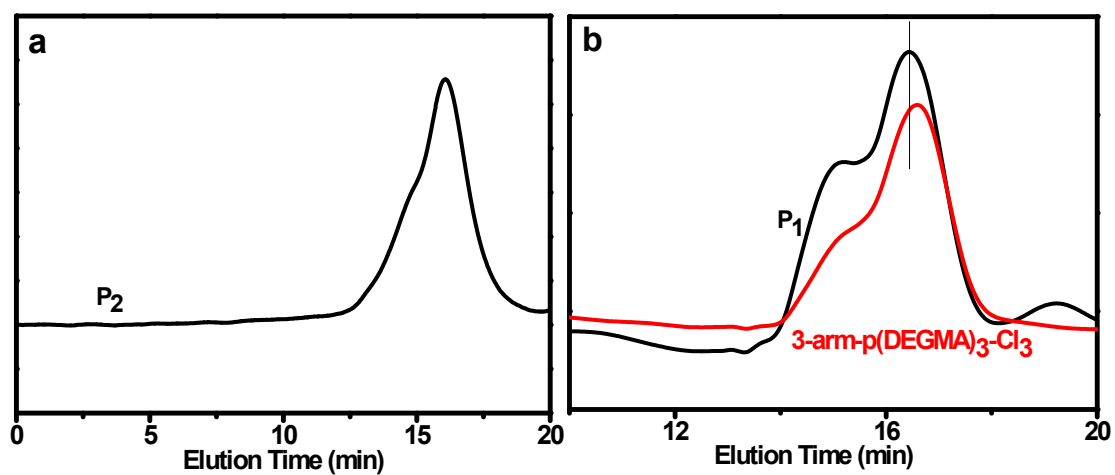


Fig. S3 GPC traces of (a) 3-arm-p(DEGMA₃₃-*R*-DMAEMA₂₃) (P_2) copolymer (b) 3-arm-p(DEGMA)₃-Cl₃ macro-initiator and 3-arm-p(DEGMA₃₄-*B*-DMAEMA₂₁) (P_1) copolymer in DMF

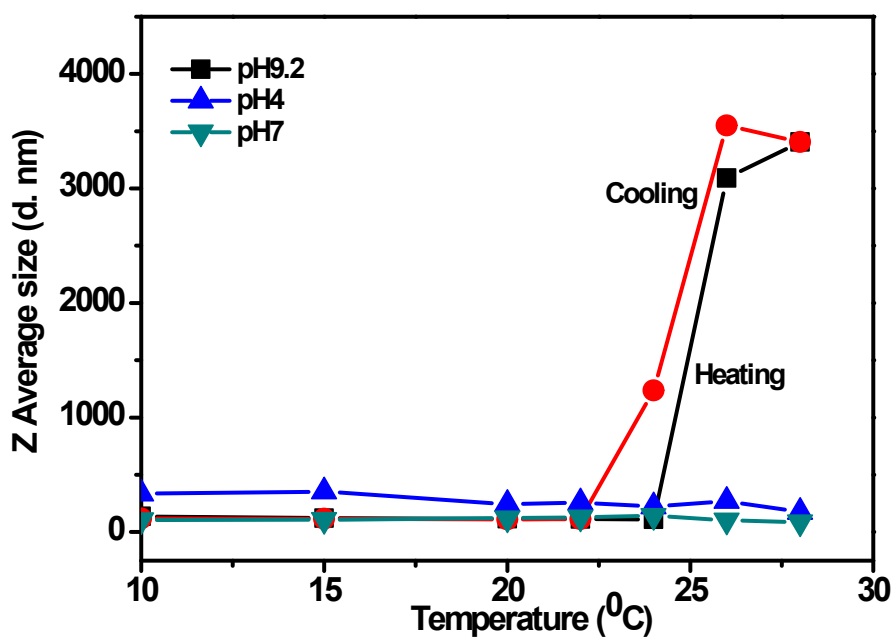


Fig. S4 Z average size vs. temperature plot of P_1 block copolymer containing $17 \mu\text{M}$ ANS at different pH obtained from DLS study in aqueous solution (0.4% w/v).

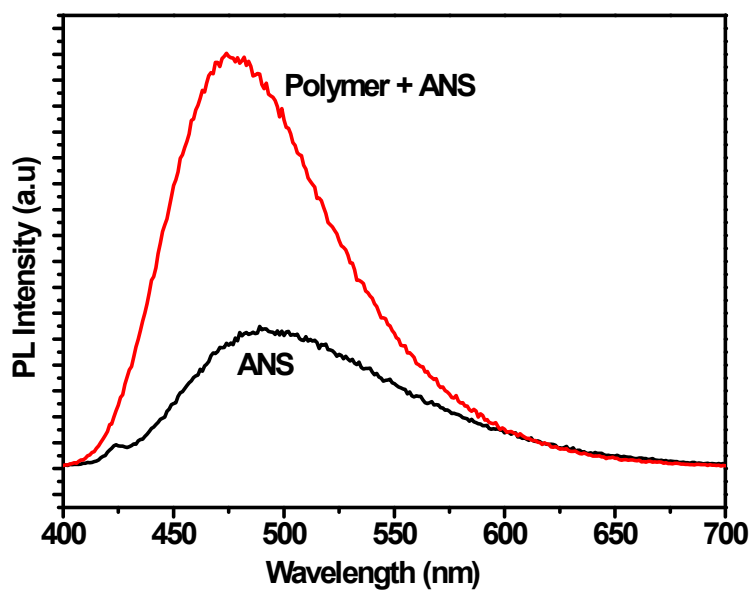


Fig. S5 PL intensity vs wavelength plot of pure ANS in aqueous medium and ANS in presence P_3 copolymer solution (0.4 % w/v).

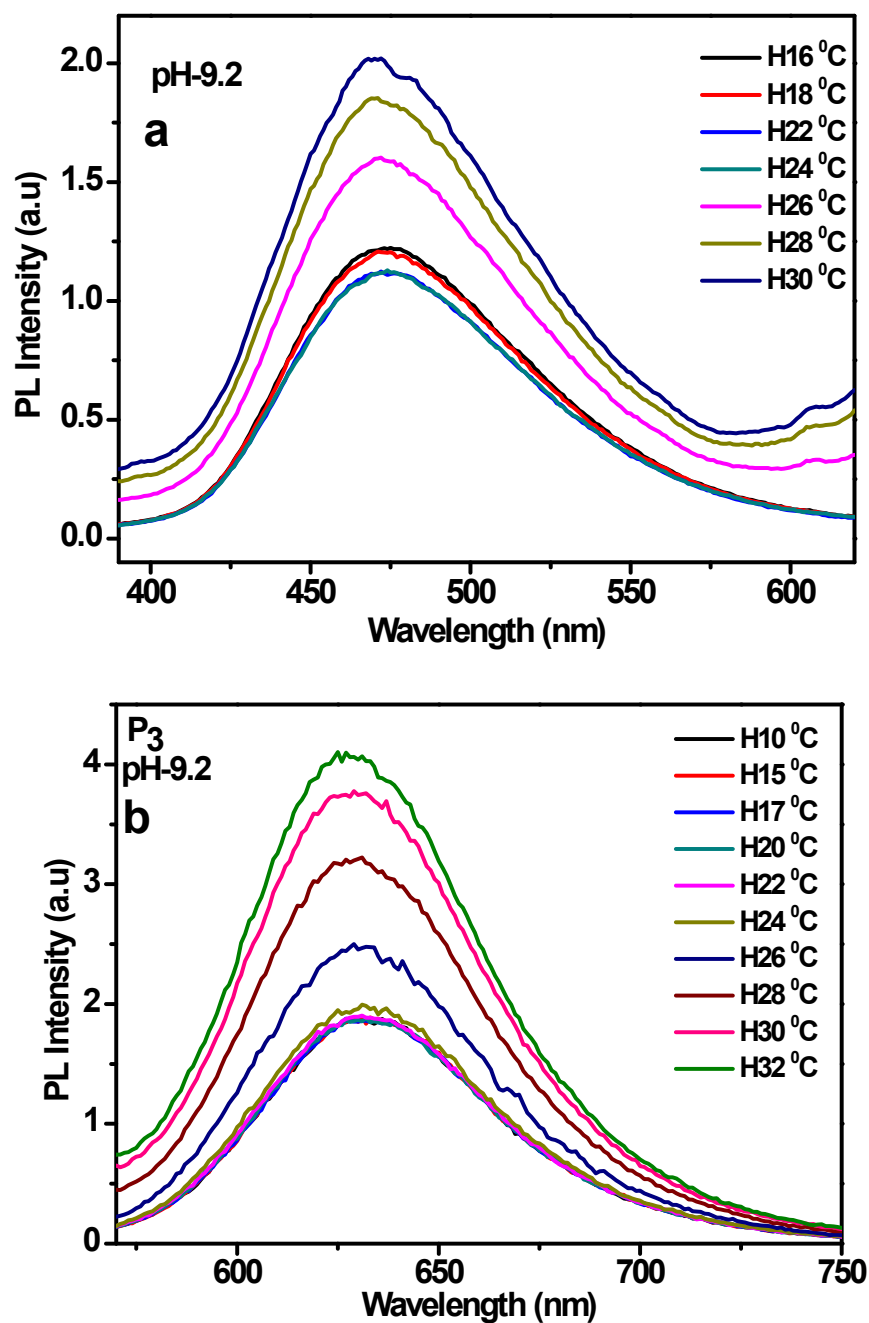


Fig. S6 (a) PL intensity vs wavelength plot of P_2 copolymer solution (0.4 % w/v) containing 17 μM ANS with increasing temperature at pH-9.2. (b) PL intensity vs wavelength plot of P_3 copolymer solution (0.4 % w/v) containing 17 μM Nile red with increasing temperature at pH-9.2.

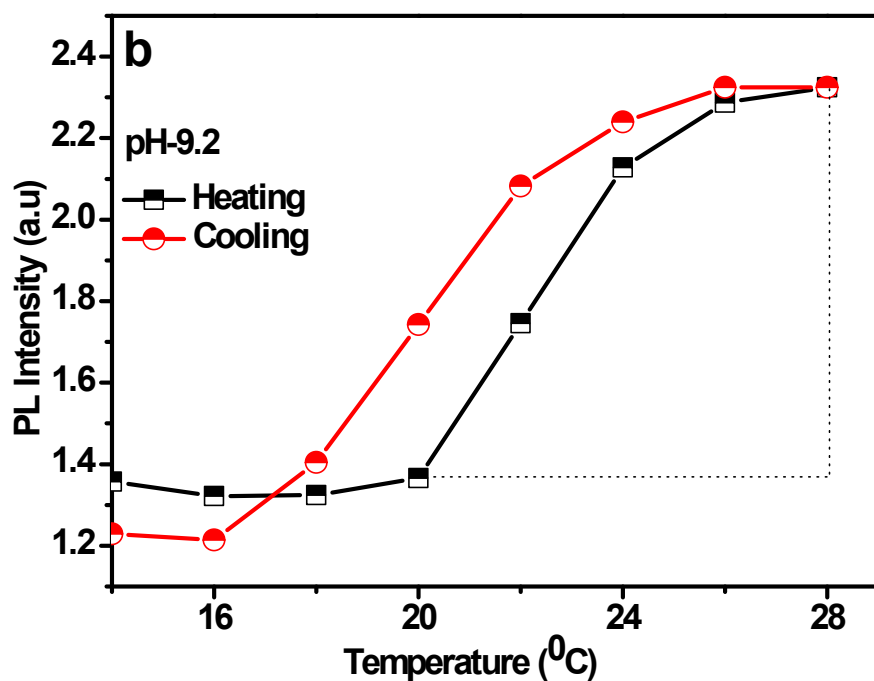
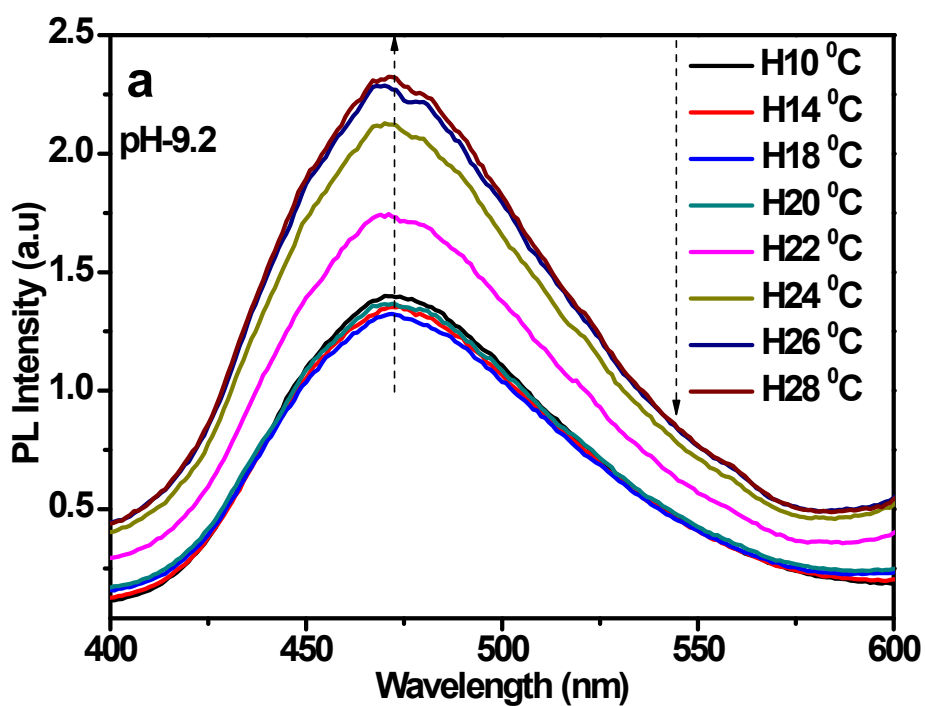


Fig. S7 (a) PL-Intensity vs wavelength plot of P_1 copolymer solution (0.4 % w/v) with increasing temperature at pH-9.2. (b) Intensity vs temperature plot of P_1 copolymer solution (0.4 % w/v) at pH-9.2 with increasing temperature.

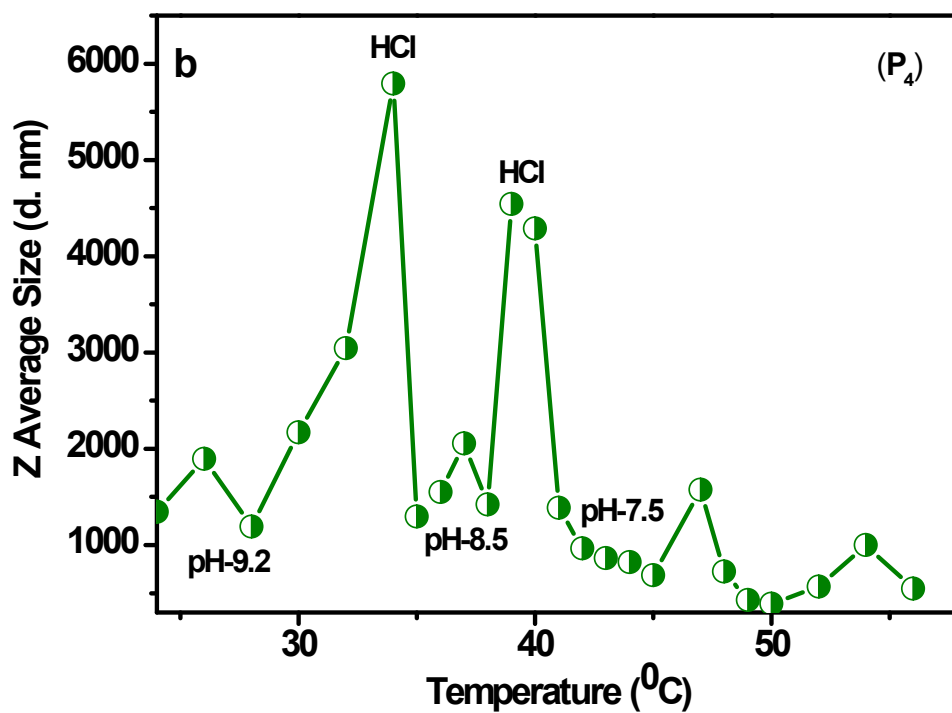


Fig. S8 Z average size vs temperature plot of aqueous solution P₄ copolymer with variation of pH

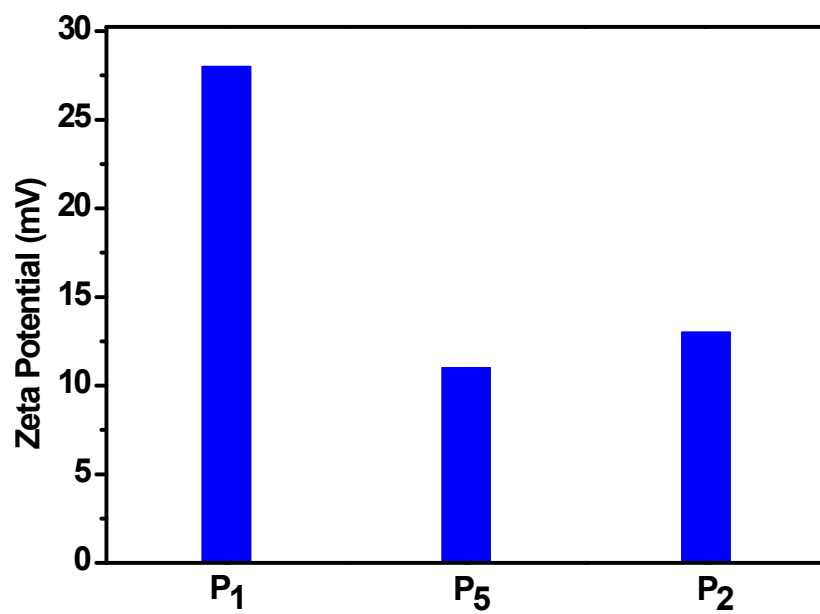


Fig. S9 The bar diagram of zeta potential values arising from the surface charge of **P₁**, **P₂** and **P₅** copolymers