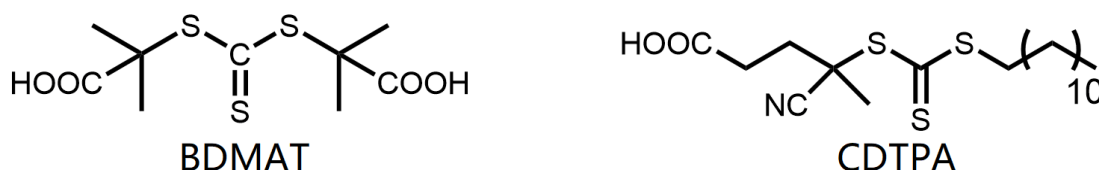


Supporting Information for

Synthesis of ABA triblock copolymer nanoparticles by polymerization induced self-assembly and their application as efficient emulsifier

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1 Scheme S1



Scheme S1. RAFT reagents BDMAT and CDTPA.

2 Synthesis and characterization of PHPMA-*b*-PS diblock copolymer nanoparticles

1) Table S1

Table S1. Summary of the synthesis of PHPMA macro-CTA and PHPMA-*b*-PS.

Polymer ^a	[M]:[CTA]:[I]	Time (h)	Conv. ^b (%)	M_n (kg/mol)			D^f	D_{TEM}^g (nm)	D_h^h (nm)
				$M_{n,th}^c$	$M_{n,GPC}^d$	$M_{n,NMR}^e$			
H ₃₅	175:5:1	8	98.6	5.4	5.4	-	1.14	-	-
H ₆₄	325:5:1	8	98.2	9.6	9.4	-	1.16	-	-
H ₉₉	500:5:1	8	98.9	14.6	14.2	-	1.08	-	-
H ₁₂₃	650:5:1	8	94.8	18.1	17.6	-	1.08	-	-
H ₆₄ S ₉₃	300:3:1	24	92.8	19.3	17.7	20.4	1.18	17	34
H ₆₄ S ₁₇₇	600:3:1	24	88.4	28.1	36.0	33.2	1.06	22	37
H ₆₄ S ₂₇₄	900:3:1	24	91.4	38.2	43.2	39.4	1.12	23	50
H ₆₄ S ₃₆₇	1200:3:1	24	91.8	47.8	58.2	50.5	1.12	31	55
H ₃₅ S ₂₇₀	900:3:1	24	90.1	33.5	39.7	34.4	1.04	35	69
H ₉₉ S ₂₇₂	900:3:1	24	90.5	43.0	46.5	44.1	1.05	22	43
H ₁₂₃ S ₂₆₆	900:3:1	24	88.6	45.8	49.1	50.5	1.13	21	36

^a H represents PHPMA, S represents PS and HS represents the PHPMA-*b*-PS diblock copolymer. ^b The monomer conversion determined by ¹H NMR analysis. ^c The theoretical molecular weight determined by monomer conversion according to eqn 1. ^d The molecular weight determined by GPC analysis. ^e The molecular weight determined by ¹H NMR analysis. ^f The D (M_w/M_n) values determined by GPC analysis. ^g The diameter of nanoparticles was obtained by analysis of 50 particles with the help of TEM. ^h The hydrodynamic diameter (D_h) of nanoparticles by DLS analysis.

2) ¹H NMR spectra

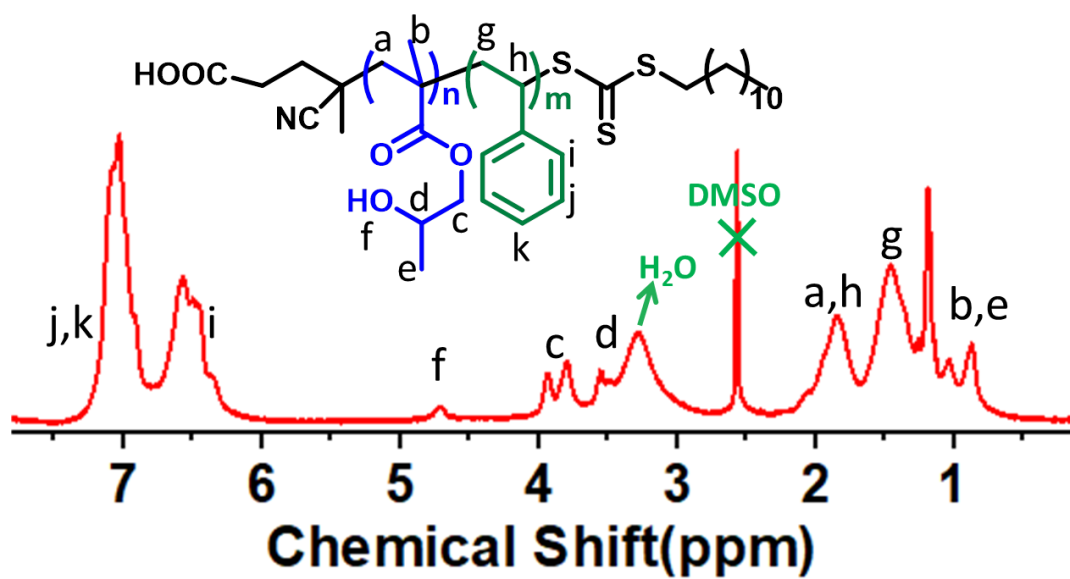


Figure S1. The ¹H NMR spectra of PHPMA₆₄-*b*-PS₂₇₄.

3) GPC traces

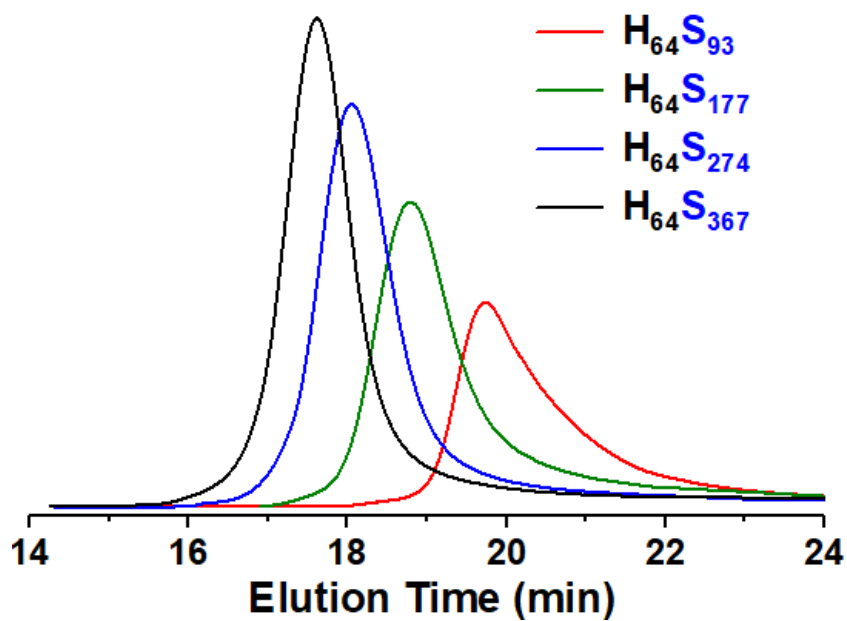


Figure S2. The GPC traces of PHPMA-*b*-PS.

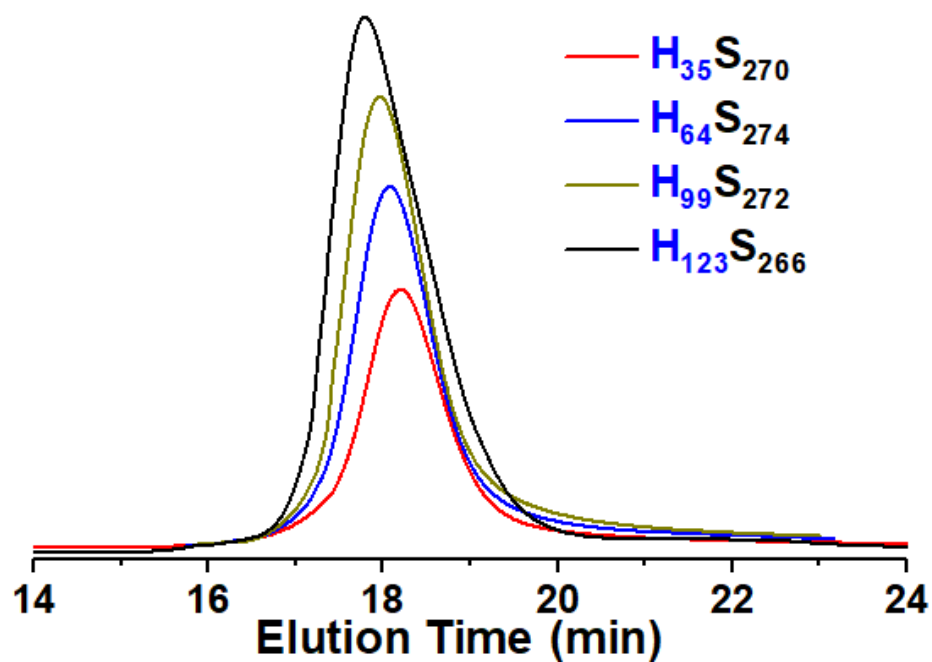


Figure S3. The GPC traces of PHPMA-*b*-PS.

4) TEM image

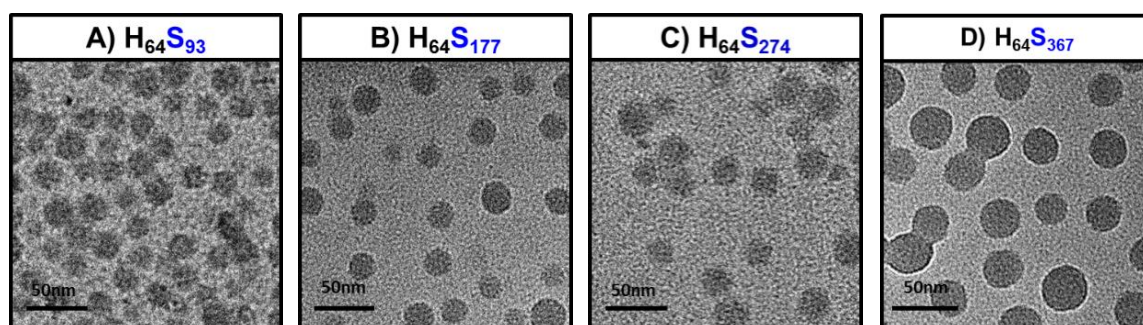


Figure S4. The TEM images of the PHPMA₆₄-*b*-PS diblock copolymer nanoparticles of H₆₄S₉₃ (A), H₆₄S₁₇₇ (B), H₆₄S₂₇₄ (C) and H₆₄S₃₆₇ (D) respectively.

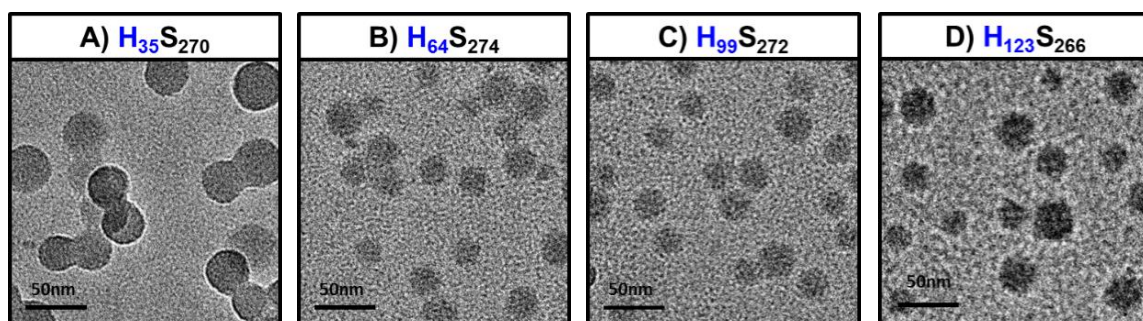


Figure S5. The TEM images of the PHPMA-*b*-PS₂₇₀ diblock copolymer nanoparticles of H₃₅S₂₇₀ (A), H₆₄S₂₇₄ (B), H₉₉S₂₇₂ (C) and H₁₂₃S₂₆₆ (D) respectively.

5) DLS analysis

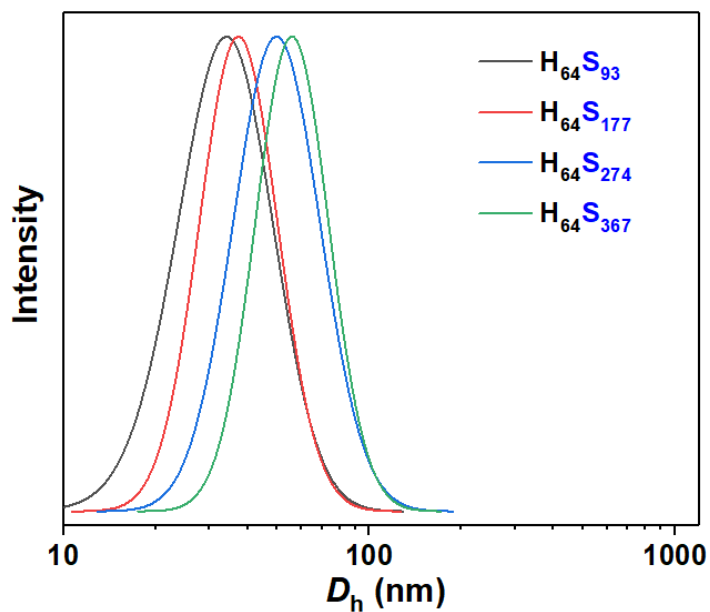


Figure S6. Hydrodynamic diameter (D_h) of the PHPMA-*b*-PS triblock copolymer nanoparticles of $H_{64}S_{93}$, $H_{64}S_{177}$, $H_{64}S_{274}$ and $H_{64}S_{367}$.

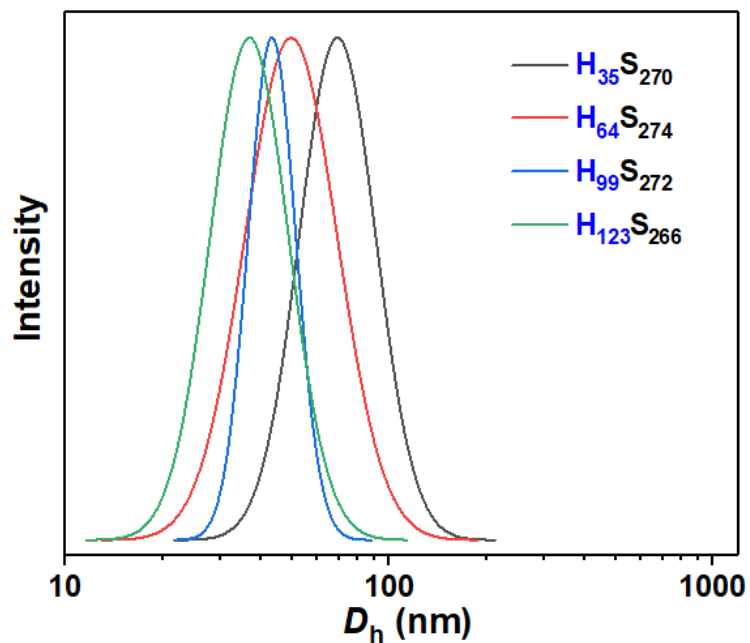


Figure S7. Hydrodynamic diameter (D_h) of the PHPMA-*b*-PS triblock copolymer nanoparticles of $H_{35}S_{270}$, $H_{64}S_{274}$, $H_{99}S_{272}$ and $H_{123}S_{266}$.