

Supporting Information

Photocleavable Amphiphilic Diblock Copolymer with an Azobenzene Linkage

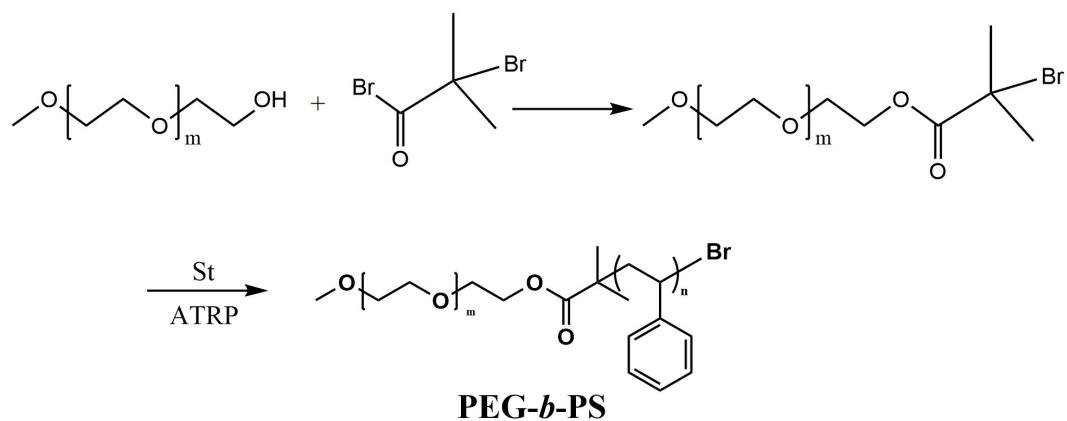
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Synthesis of ATRP initiator

To a CH₂Cl₂ (5 mL) solution of a mixture of 2-(N-Ethylanilino)ethanol (0.36 g, 1 mmol) and triethylamine (1 mL) under ice bath was added 2-bromoisobutyryl bromide (0.46 g, 2 mmol) in 5 mL CH₂Cl₂. The solution was stirred at room temperature overnight. To the resulting solution was added CH₂Cl₂ and washed with water, dried over anhydrous MgSO₄. After solvent removal, column chromatography (SiO₂, ethyl acetate: petroleum ether = 2:3) was undertaken to afford the product as oil. Yield: 80%. ¹H NMR (600 MHz, CDCl₃) δ = 1.16-1.19 (t, 3H), 1.90 (s, 6H), 3.41-3.45 (t, 2H), 3.59-3.61 (t, 2H), 4.31-4.33 (t, 2H), 6.67-6.69 (s, 1H), 6.72-6.74(d, 2H) 7.21-7.23 (t, 3H).



Scheme S1 Synthetic route of amphiphilic diblock copolymer PEG-*b*-PS by ATRP method.

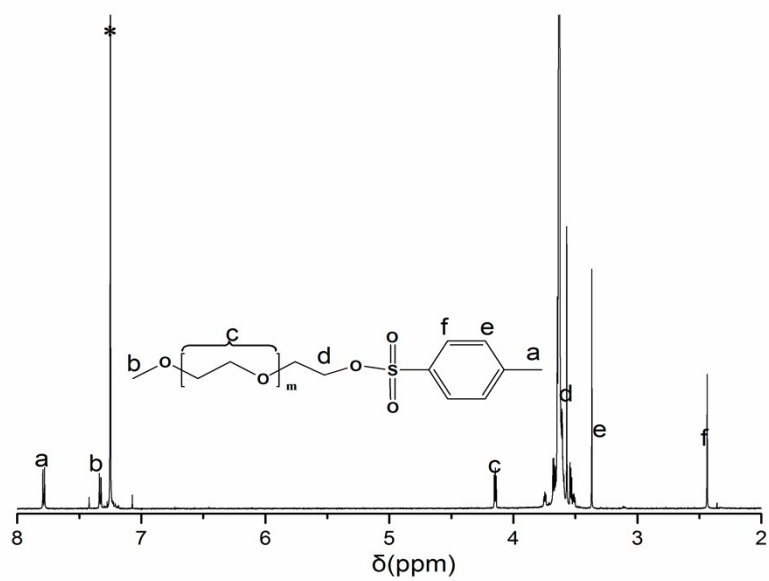


Figure S1 ^1H NMR spectrum (600 MHz, CDCl_3 , 298 K) of PEG-Ts. Asterisk indicates the solvent peak.

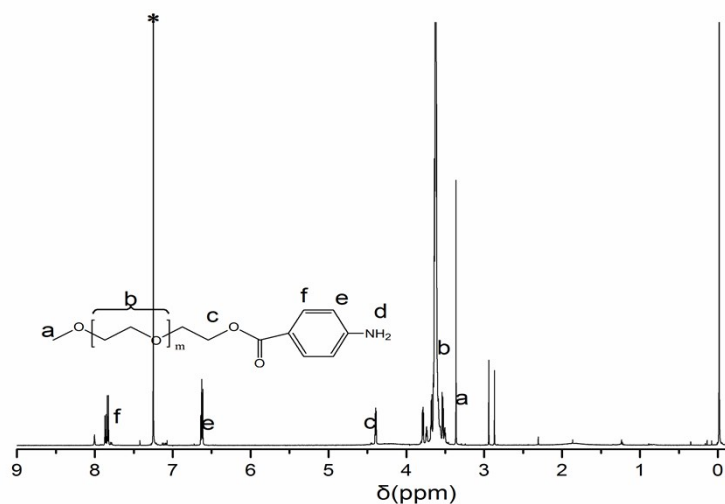


Figure S2 ^1H NMR spectrum (600 MHz, CDCl_3 , 298 K) of PEG- NH_2 . Asterisk indicates the solvent peak.

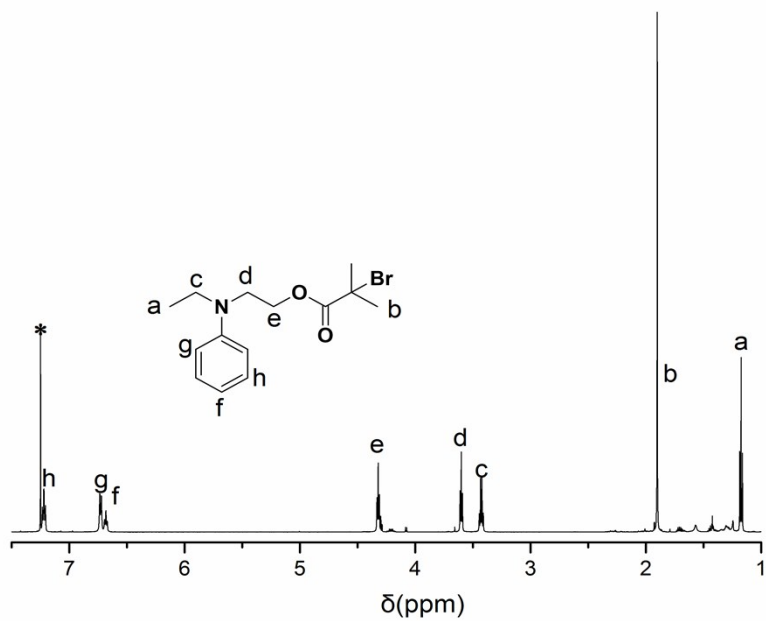


Figure S3 ^1H NMR spectrum (600 MHz, CDCl_3 , 298 K) of ATRP initiator. Asterisk indicates the solvent peak.

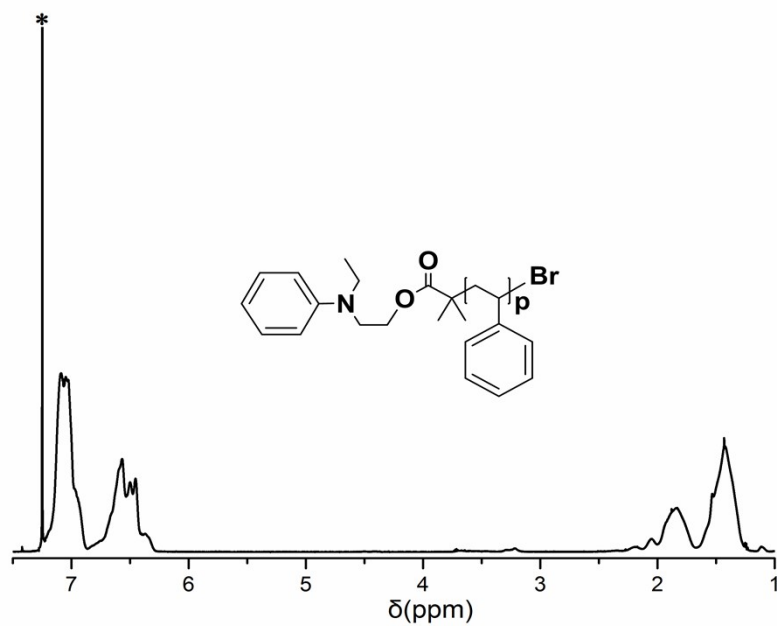


Figure S4 ¹H NMR spectrum (600 MHz, CDCl₃, 298 K) of PS-N-Ph. Asterisk indicates the solvent peak.

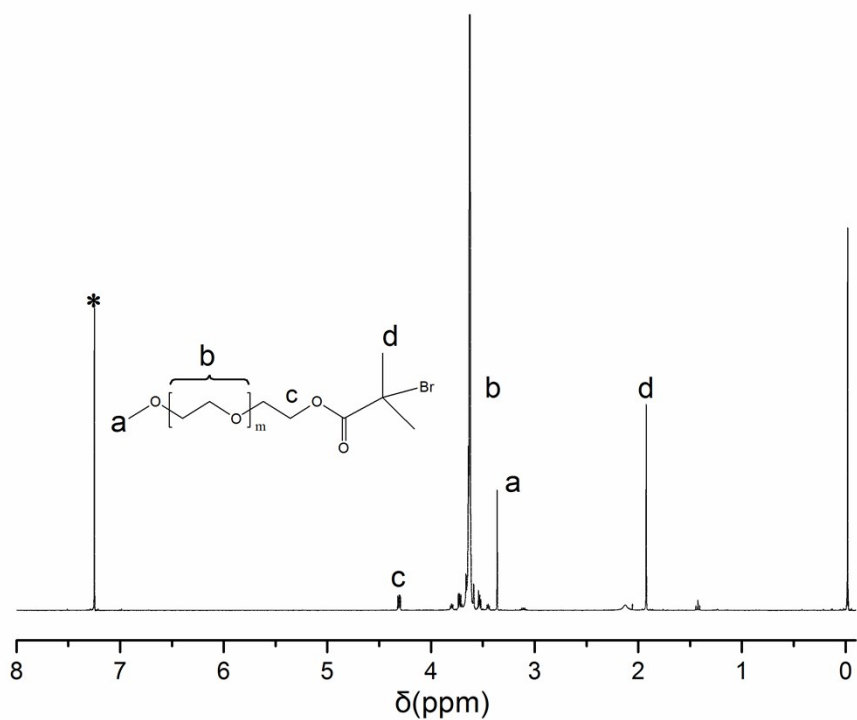


Figure S5 ¹H NMR spectrum (600 MHz, CDCl₃, 298 K) of PEG-Br. Asterisk indicates the solvent peak.

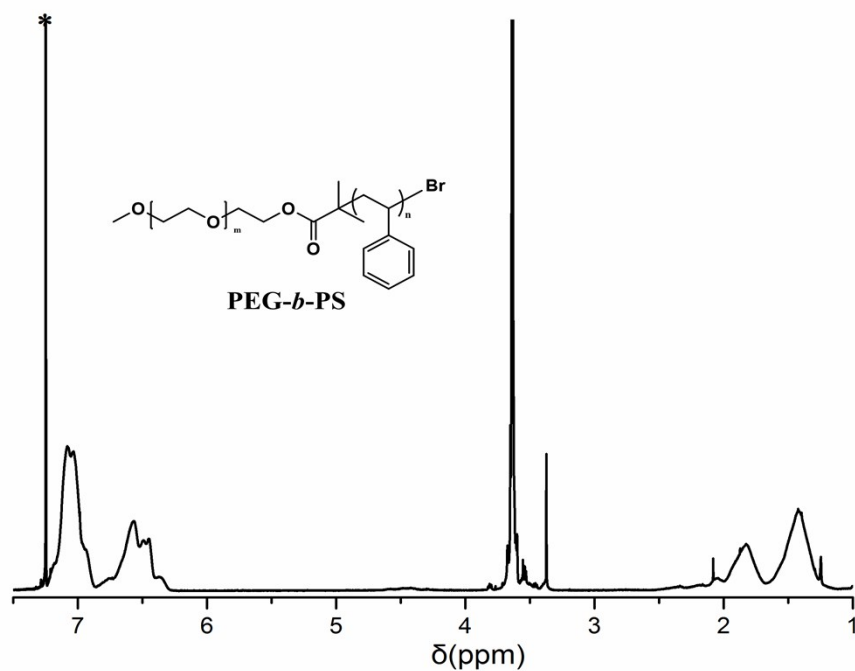


Figure S6 ¹H NMR spectrum (600 MHz, CDCl₃, 298 K) of PEG-*b*-PS. Asterisk indicates the solvent peak.

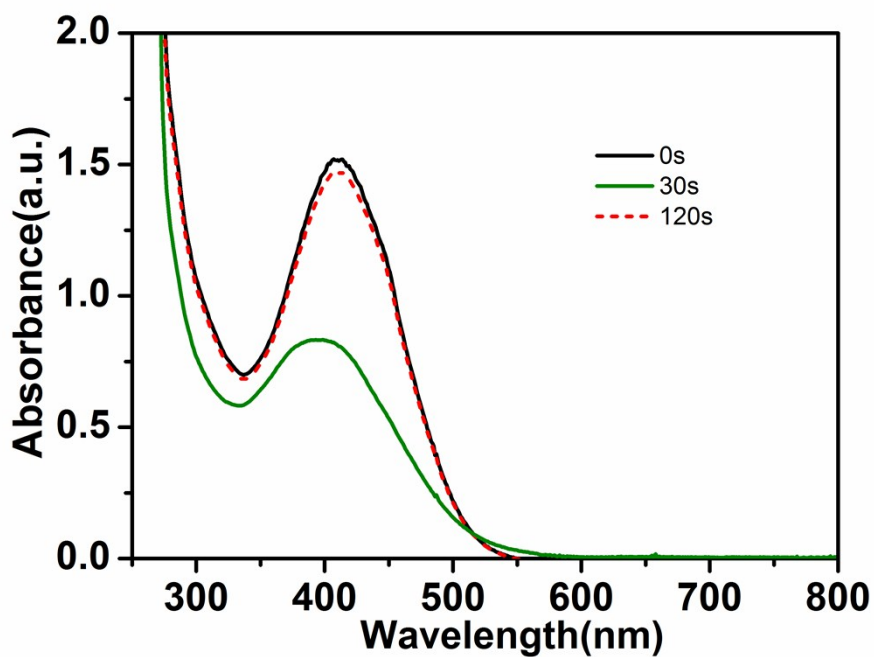


Figure S7 UV/Vis absorption spectrum of amphiphilic diblock copolymer (PEG-Azo-PS) in THF solution (5.0×10^{-5} M) upon irradiation with 450 nm LED light for 30 s (green), and keep the solution in dark for 90 s.

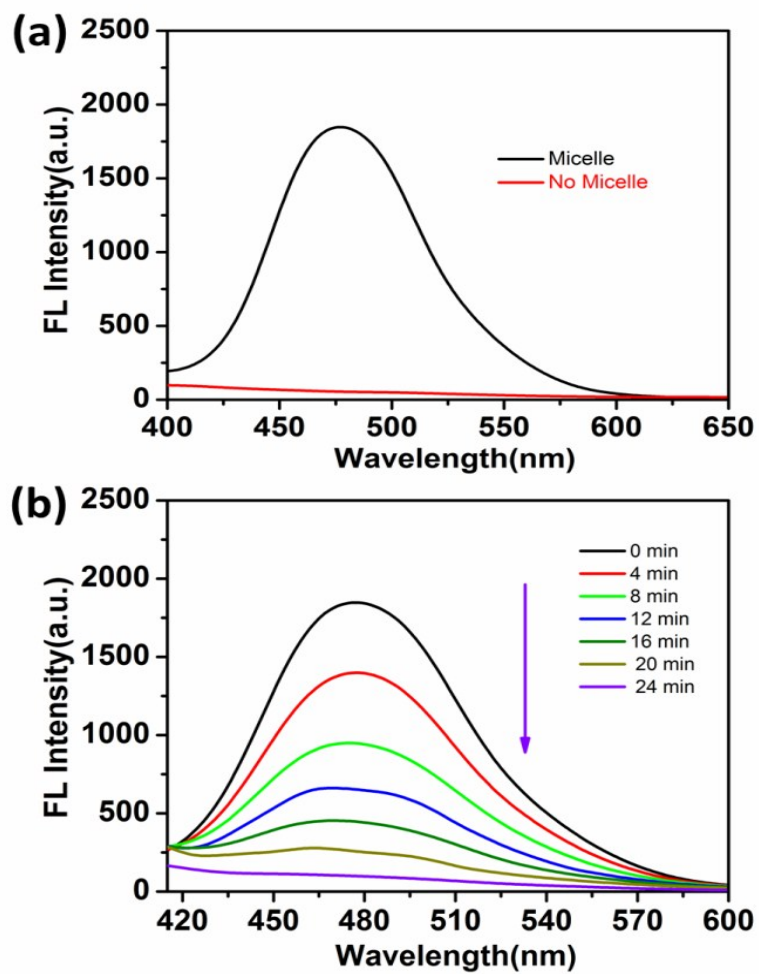


Figure S8 Fluorescence spectra of pyrene (excitation at 380 nm): (a) in aqueous solutions with and without the polymer micelle; in the micelle solutions (b) under UV irradiation for different times.