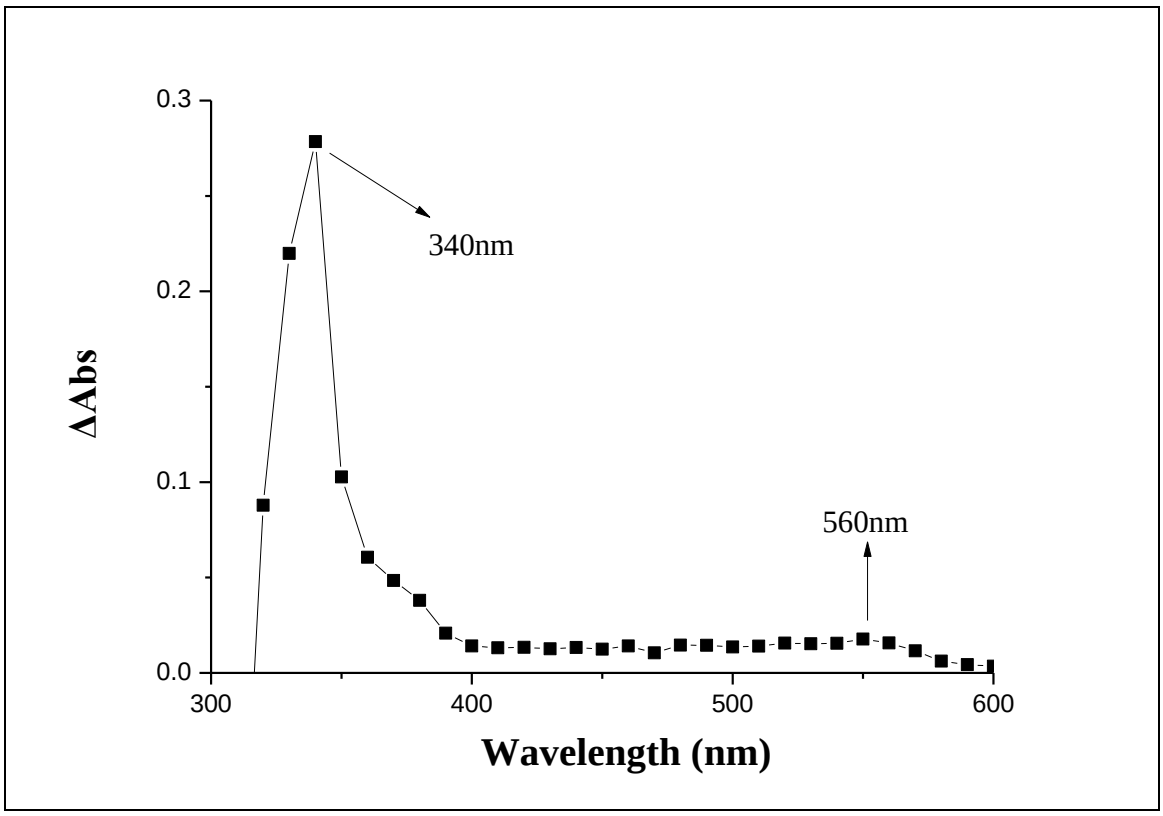

Fig. S1 Transient optical absorption spectrum recorded 10 ns following laser excitation (355 nm, 4-6 ns) of W-Si-HBP$_2$-A (1.0×10^{-3}M) in argon saturated acetonitrile solution at 25 °C.

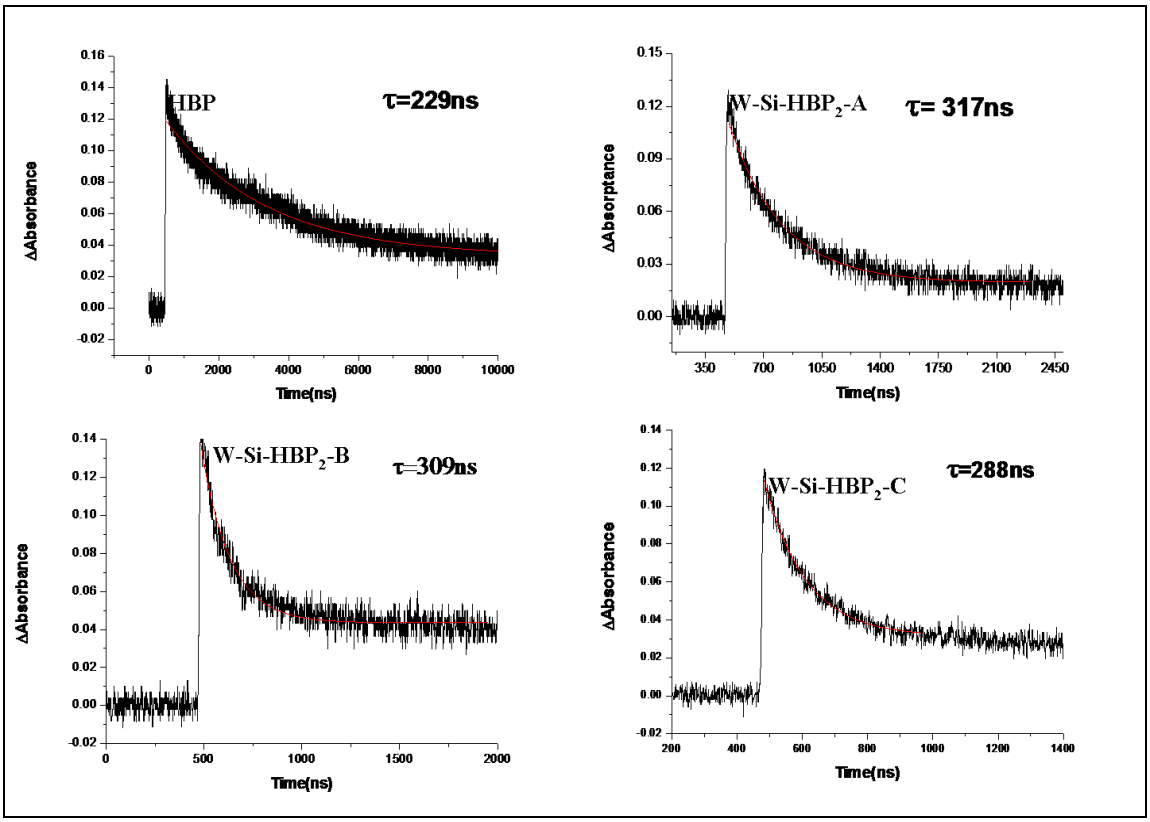

Fig. S2 Transient absorption kinetics observed at 560 nm following laser excitation (355 nm, 4-6 ns) of HBP and W-Si-HBP$_2$-A/B/C (1.0×10^{-3}M) in argon saturated acetonitrile solution at 25 °C.

Table S1. The contact angle and the dispersion surface energy (γ_S^d) of the gradient polymer film (PAM) initiated by W-Si-HBP$_2$-A/B/C

Initiator (concentration, mol/L)	θ (H^2O)/^{O}		γS^d (H^2O)/ (mN/m)	
	Standing time (min)			
	10	60	10	60
W-Si-HBP$_2$-B (1.0×10^{-3})	24.83	29.25	201	193
W-Si-HBP$_2$- B (2.5×10^{-3})	34.55	38.88	183	174
W-Si-HBP$_2$- B (4.5×10^{-3})	36.79	41.78	179	168
W-Si-HBP$_2$- B (6.0×10^{-3})	41.50	43.5	169	164
W-Si-HBP$_2$-C (1.0×10^{-3})	33.04	39.71	186	173
W-Si-HBP$_2$-C (2.5×10^{-3})	41.50	45.76	169	159
W-Si-HBP$_2$-C (4.5×10^{-3})	43.95	53.68	163	140
W-Si-HBP$_2$-C (6.0×10^{-3})	49.72	55.91	149	134

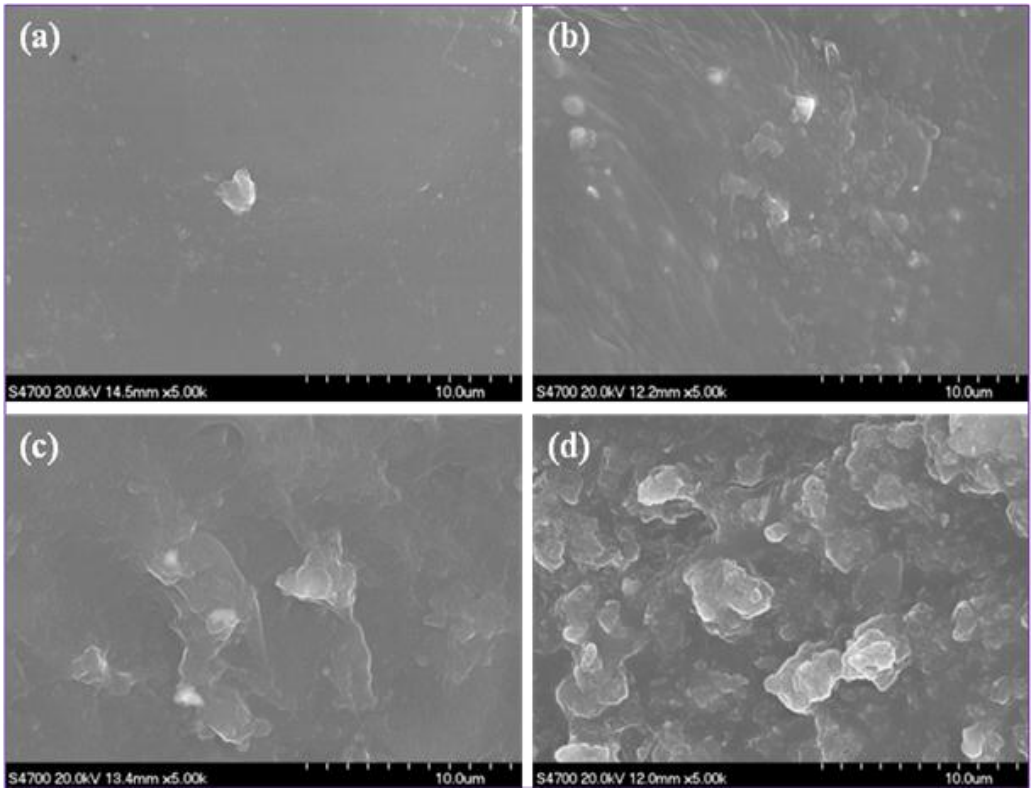

Fig. S3 SEM images of the polymer films (PAM) initiated by different concentration of W-Si-HBP$_2$-B ((a) 1.0×10^{-3} mol/L (b) 2.5×10^{-3} mol/L (c) 4.5×10^{-3} mol/L (d) 6.0×10^{-3} mol/L) and TEOA (3.3×10^{-2} mol/L)

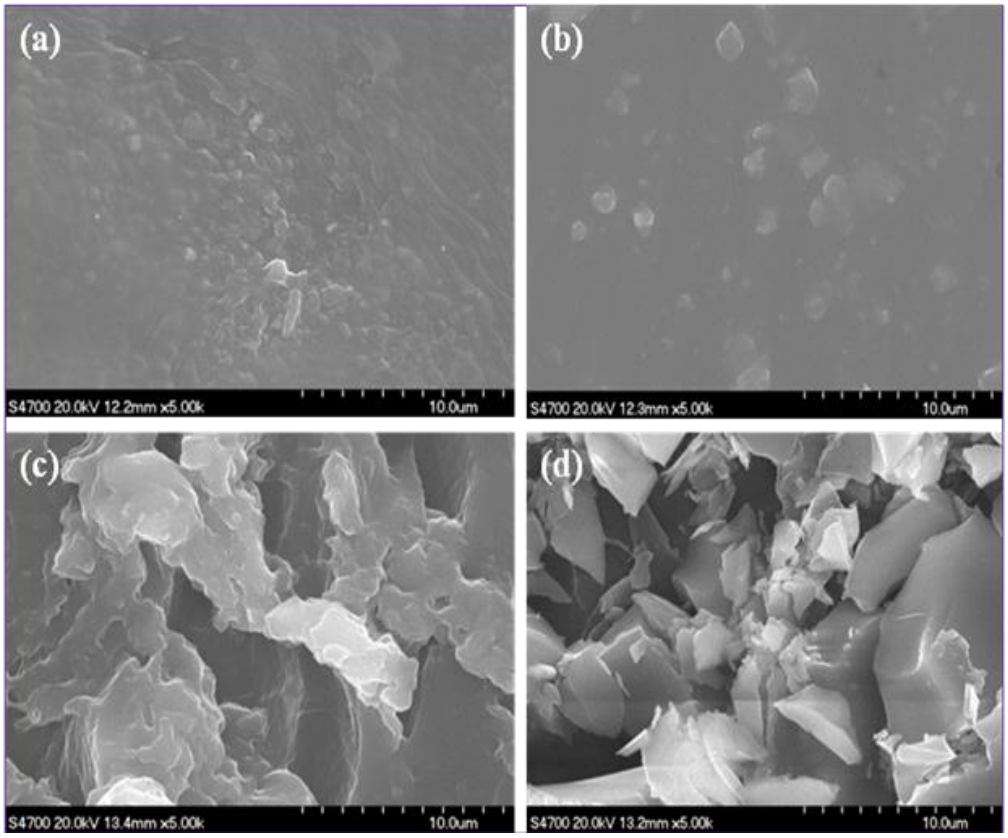

Fig. S4 SEM images of the polymer films (PAM) initiated by different concentration of W-Si-HBP$_2$-C ((a) 1.0×10^{-3} mol/L (b) 2.5×10^{-3} mol/L (c) 4.5×10^{-3} mol/L (d) 6.0×10^{-3} mol/L) and TEOA (3.3×10^{-2} mol/L)

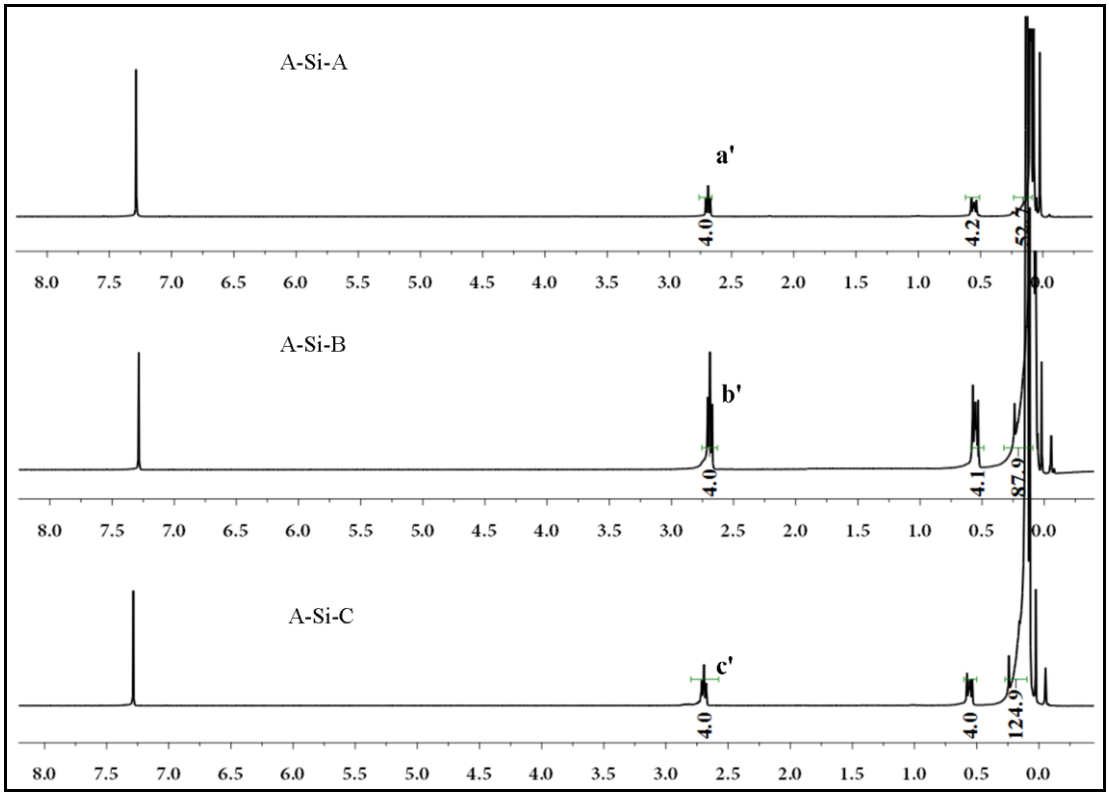

Fig. S5 ^{1}H NMR spectra of the amino polysiloxane A-Si-A/B/C

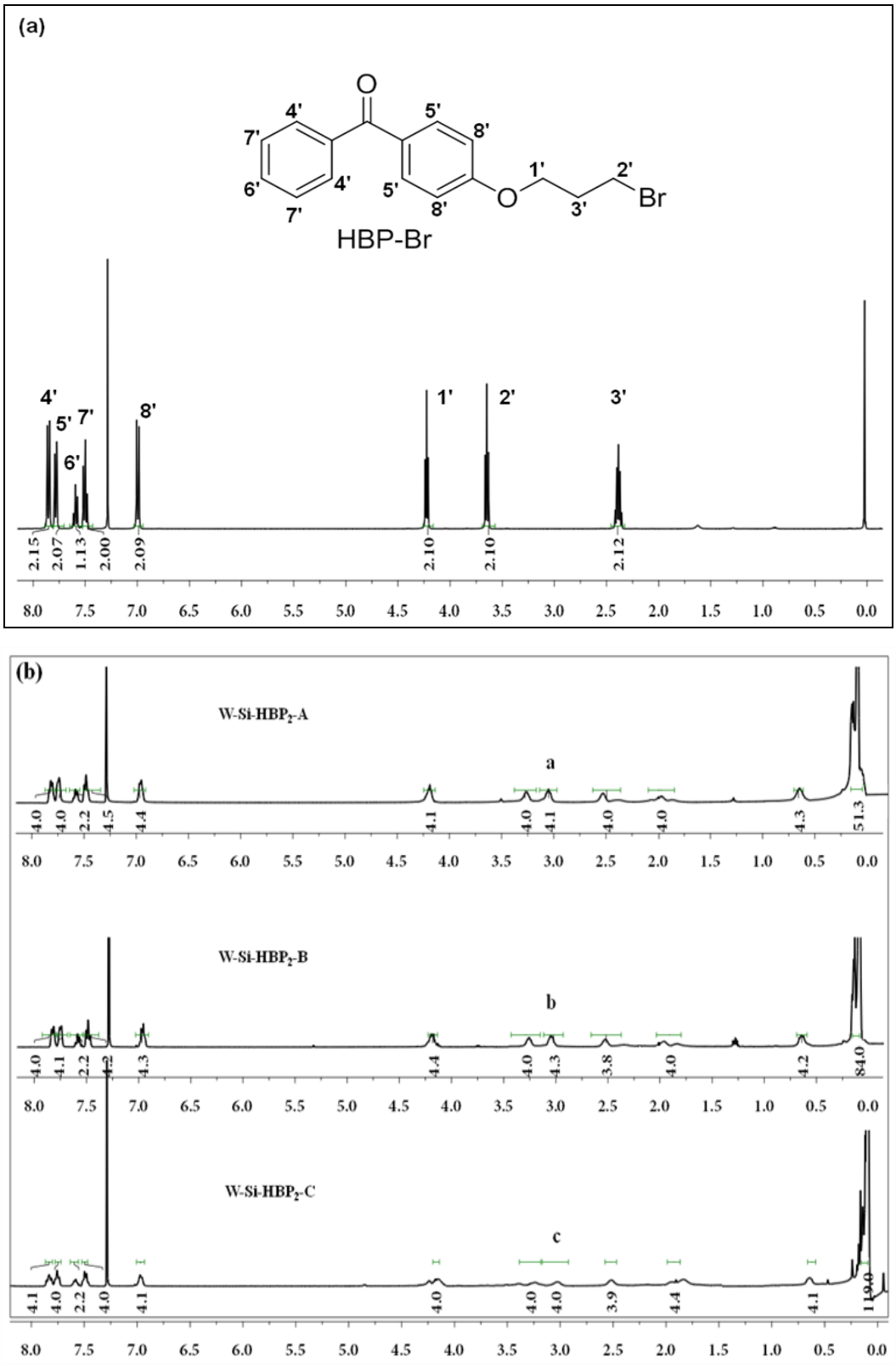

Fig. S6 ^{1}H NMR spectra of the photoinitiators, (a) HBP-Br, (b) W-Si-HBP$_2$-A/B/C.

Comparing with the spectrum of amino polysiloxane A-Si-A/B/C that shown in Fig. S5, the signals (6.90-7.91 ppm) of aromatic hydrogen of W-Si-HBP$_2$-A/B/C indicated that HBP has been linked with A-Si-A/B/C. After a nucleophilic reaction, the chemical shift of protons in -*CH*$_2$-Br group (3.66 ppm) was shifted upfield (3.28 ppm, in Fig. 6(b)) in W-Si-HBP$_2$-A/B/C, and the chemical shift of -*CH*$_2$-N (peak a'/b'/c'

in Fig. S5) in A-Si-A/B/C (2.65 ppm) was shifted downfield (3.10 ppm) in W-Si-HBP$_2$-A/B/C. The integration ratio of Si-*CH$_3$* to -*CH$_2$*-N (peak a/b/c in Fig. 6(b)) in W-Si-HBP$_2$-A/B/C was 12.59/19.23/29.88, respectively, which was similar with the corresponding ratio (13.17/21.97/31.22) of Si-*CH$_3$* to -*CH$_2$*-N (peak a'/b'/c' in Fig. S5) in A-Si-A/B/C, demonstrating that HBP linked to both sides of the A-Si-A/B/C. Additionally, the integration ratio verified that polymerization degree (n) of W-Si-HBP$_2$-A/B/C was about 7-8, 12-13, 19-20, respectively. Hence, the NMR estimates could deduce the molecular weights of A-Si-A/B/C were 664-738, 1034-1108 and 1552-1626, respectively, and W-Si-HBP$_2$-A/B/C were 1302-1376, 1672-1746 and 2190-2264, respectively, similar to the GPC results.