Electronic Supplementary Material (ESI) for RSC Advances.

SUPPORTING INFORMATION

Fabrication of low-fouling, high-loading polymeric surfaces through pH-controlled RAFT

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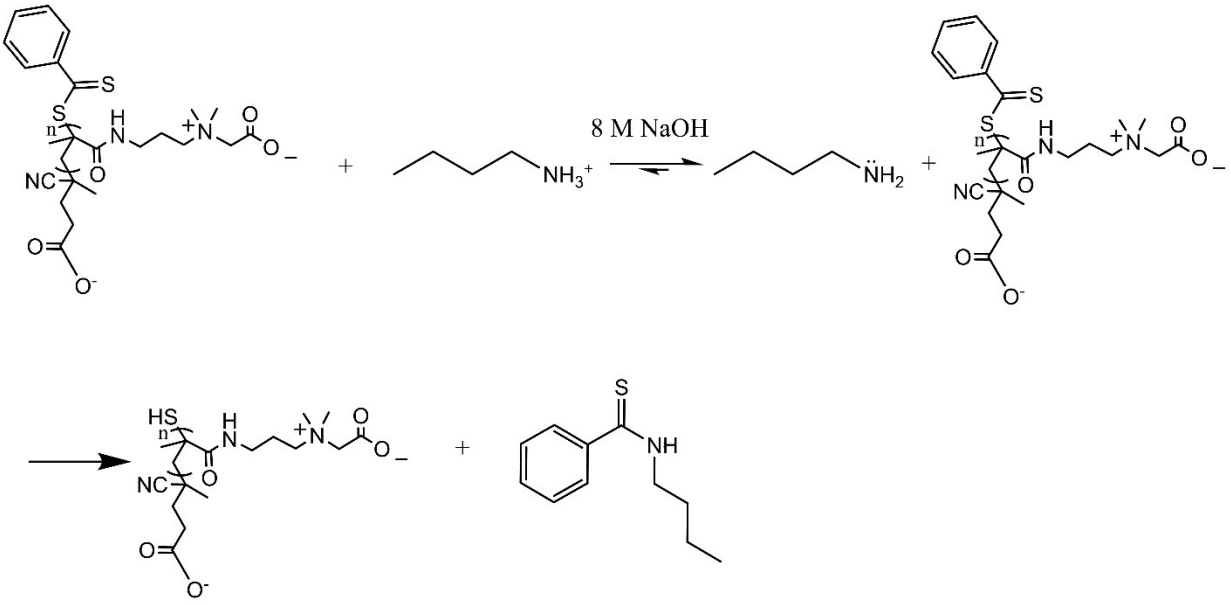


Scheme S1: Mechanism of thiocarbonylthio aminolysis: RAFT chain end modification via pH dependent aminolysis

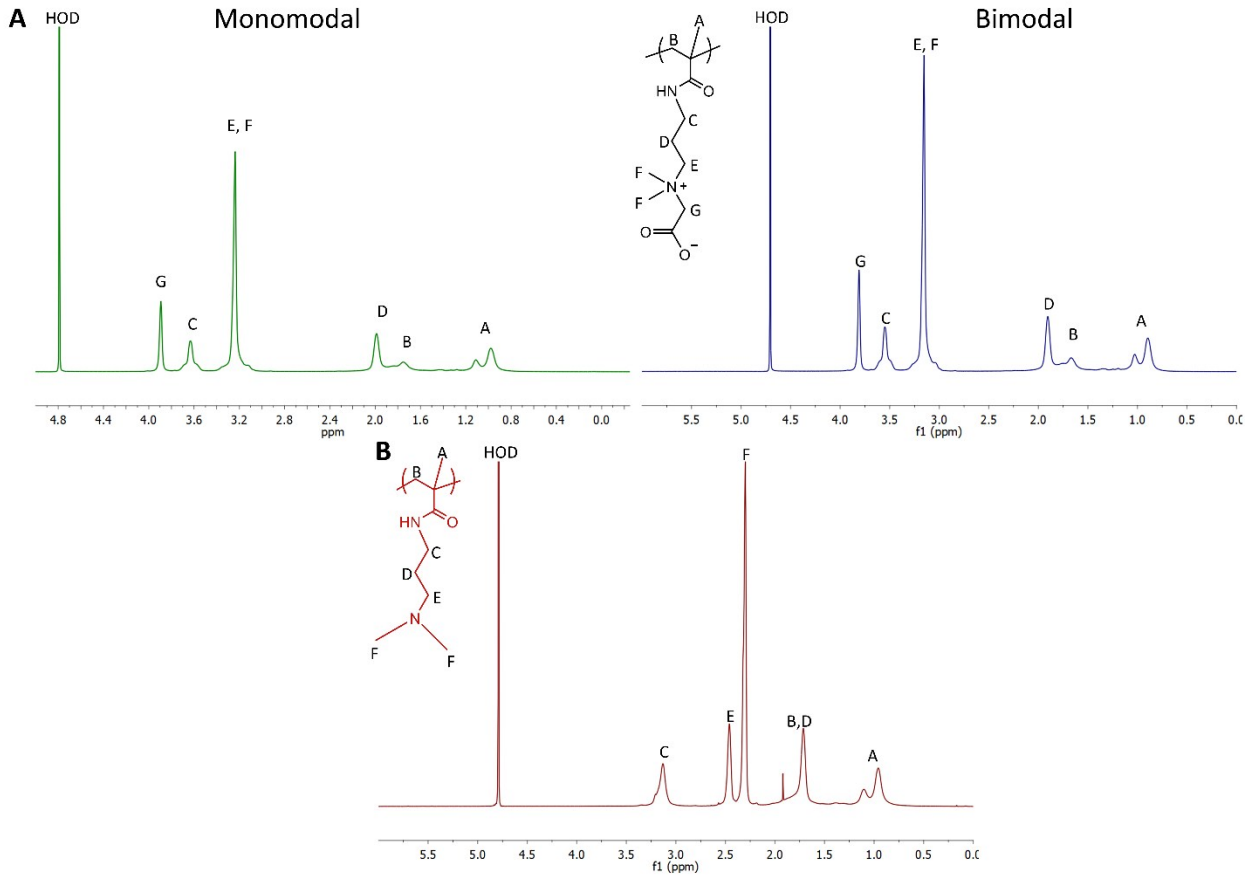


Figure S1: ^{1}H NMR (600 MHz) spectra of (A) monomodal and bimodal pCB and (B) pDMAPMA in D_2O.

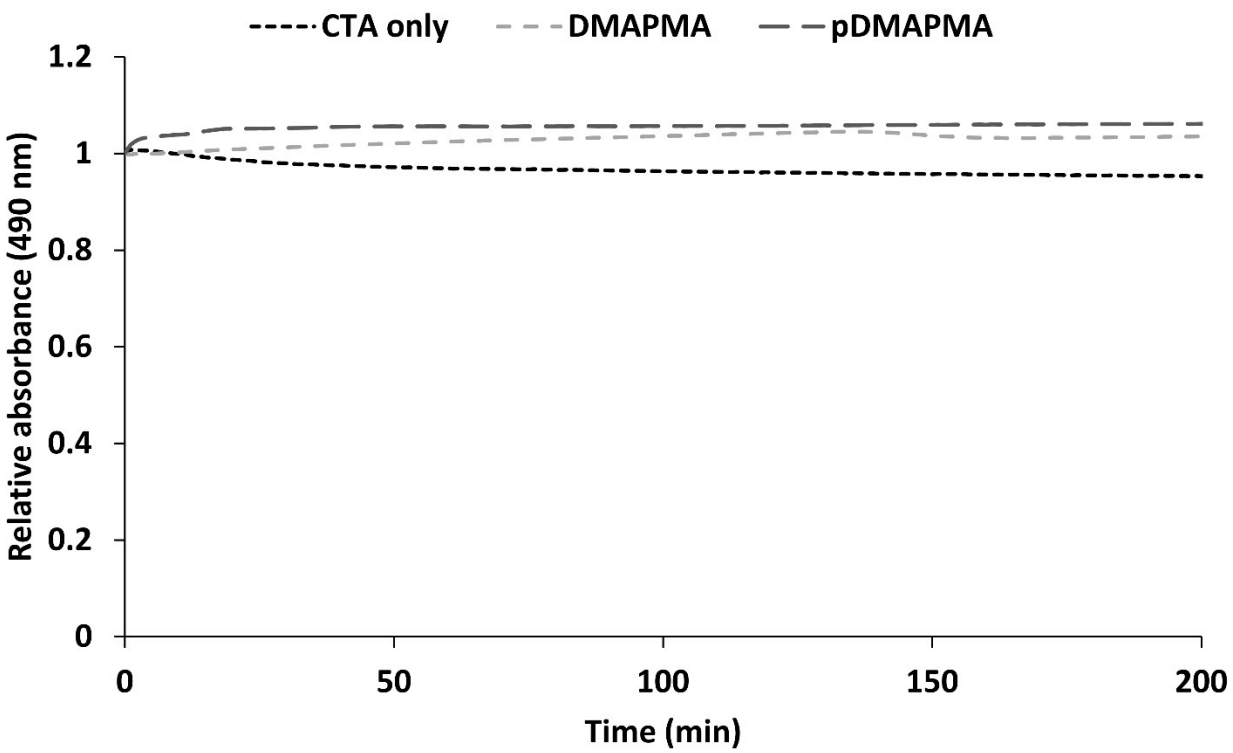
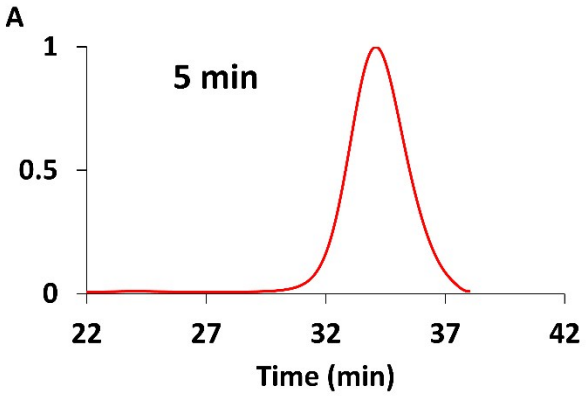
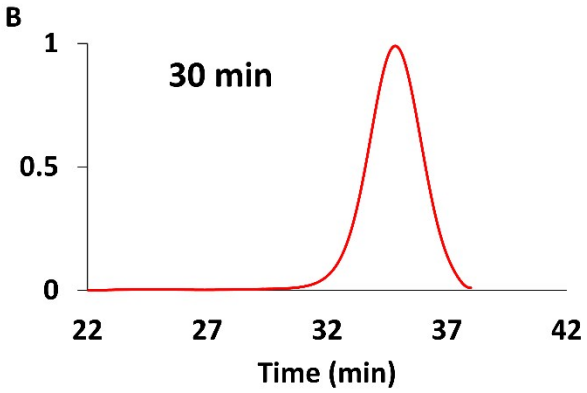
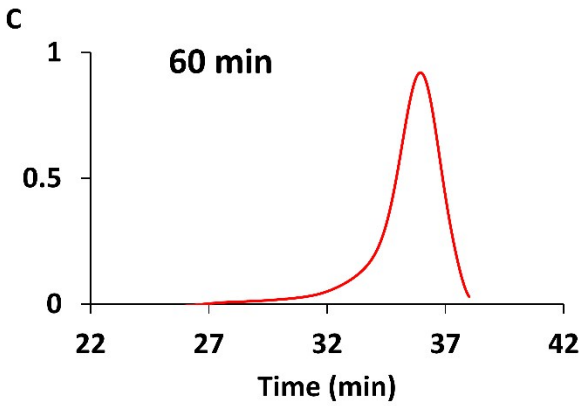


Figure S2: Degradation of CTA solutions at pH 4.5. Three solutions of of CTA only, CTA + DMAPMA and CTA + pDMAPMA in 2:1 acetate buffer (0.1 M, pH 4.5) and 1,4-dioxane were prepared. The absorbance at 490 nm will decrease upon aminolysis. No decrease in absorbance was observed when CTA was exposed to DMPAMA or pDMAPMA, indicating the tertiary amine of DMPAMA or pDMAPMA does not result in significant CTA aminolysis at pH 4.5.







D

Polymer	pH 11 (min)	M_n (kDa)	M_w (kDa)	Đ
pCB_{1h}	5	9.7	10.3	1.06
	30	8.5	8.9	1.05
	60	7.3	7.9	1.07

Figure S3: GPC chromatograms of pCB distributions as a function of polymerization time at pH 11 without butylamine. pCB synthesized without butylamine where the pH was raised to 11 at 1 h for A) 5, B) 30 and C) 60 min, respectively, with a total polymerization time of 24 h. D) Summary of calculated GPC data for traces A-C. No bimodal distribution was observed in the absence of butylamine.

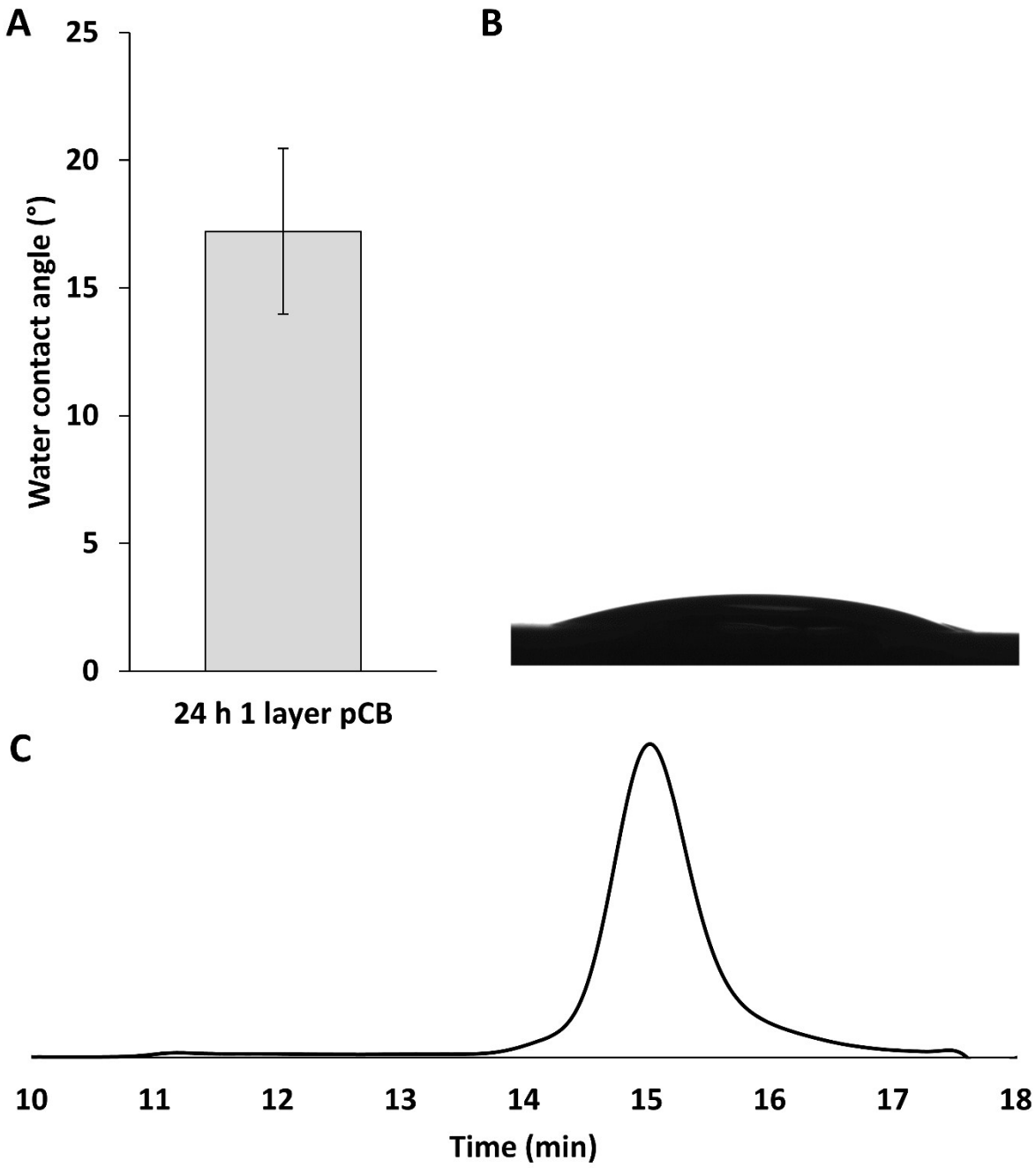


Figure S4: Thick 1 layer monomodal pCB surface. A) Static contact angle of 3 μL water droplets on wafers functionalized with 1 layer pCB with a total polymerization time of 24 h. The WCA of the thick layer presented here (17) was much lower than thin 1 layer pCB surfaces presented in Figure 4A, demonstrating the thickness dependence of WCA measurements. B) Representative photograph of water droplets on pCB functionalized wafer. C) GPC chromatogram of solution monomodal pCB produced during the synthesis of thick 1 layer pCB surfaces (M_W = 29 kDa, Đ = 1.1, analyzed on PL aquagel-OH 30 and PL aquagel-OH 40).