Supporting Information for

"Oxygen-switchable thermo-responsive random copolymers"

Lei Lei,[1] Qi Zhang,[2] Shuxian Shi,[3,] Shiping Zhu[1,*]*

[1] Department of Chemical Engineering, McMaster University, Hamilton, Canada L8S 4L7

[2] College of Chemical Engineering, Zhejiang University of Technology, Hangzhou 310014, China

[3] Key Laboratory of Carbon Fiber and Functional Polymers (Ministry of Education), Beijing University of Chemical Technology, Beijing 100029, China

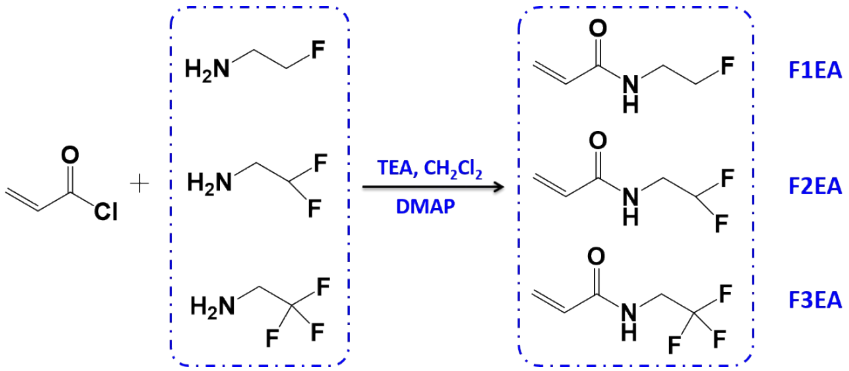

Figure S1. *Schematic illustration of fluorinated acrylamide monomers (F1EA, F2EA, F3EA) preparation.*

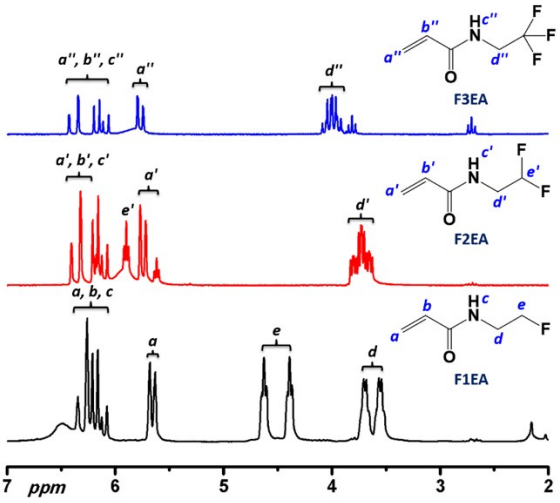

Figure S2. *^{1}H NMR spectra of fluorinated acrylamides (F1EA, F2EA, F3EA) in $CDCl_3$.*

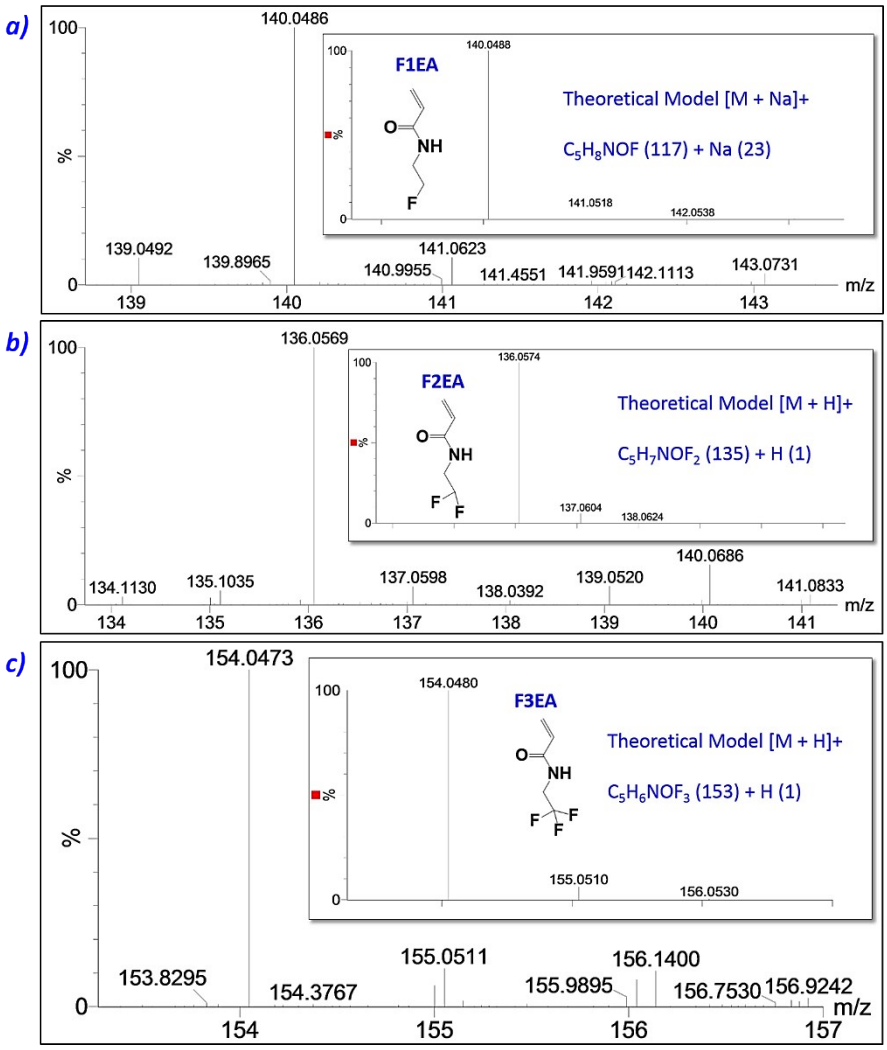

Figure S3. *Mass spectrometry (MS) of a) F1EA b) F2EA and c) F3EA. The high-resolution mass spectrometry was performed on Micromass Quattro Ultima (LC-ESI/APCI Triple Quadrupole Mass Spectrometer) with an electrospray ionization (ESI) source.* (Polartiy: +ve)

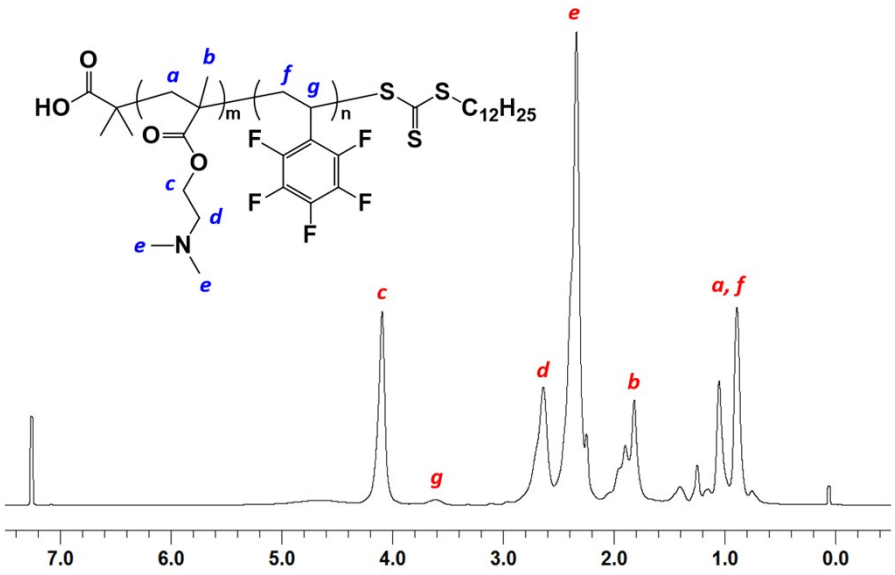

Figure S4. *^{1}H NMR spectra of P(DMA-co-FS)-5 in $CDCl_3$.*

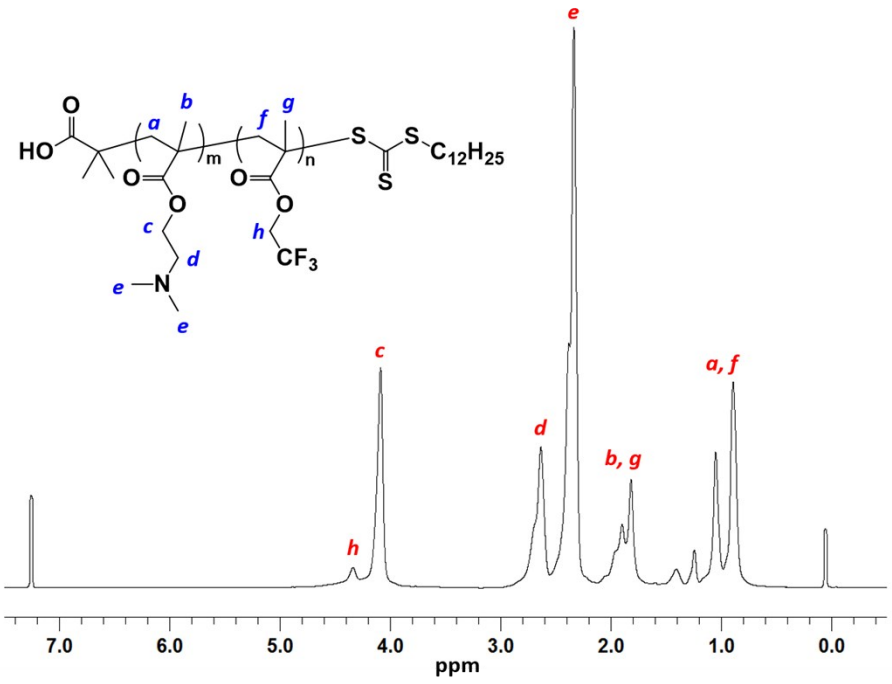

Figure S5. *^{1}H NMR spectra of P(DMA-co-FMA)-5 in $CDCl_3$.*

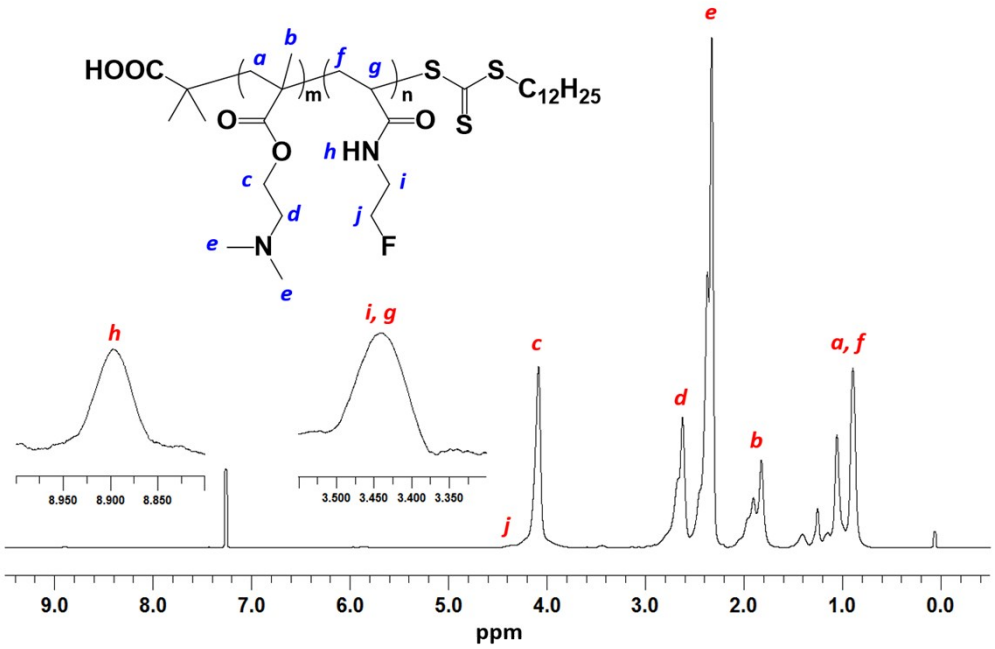

Figure S6. *^{1}H NMR spectra of P(DMA-co-F1EA)-5 in $CDCl_3$.*

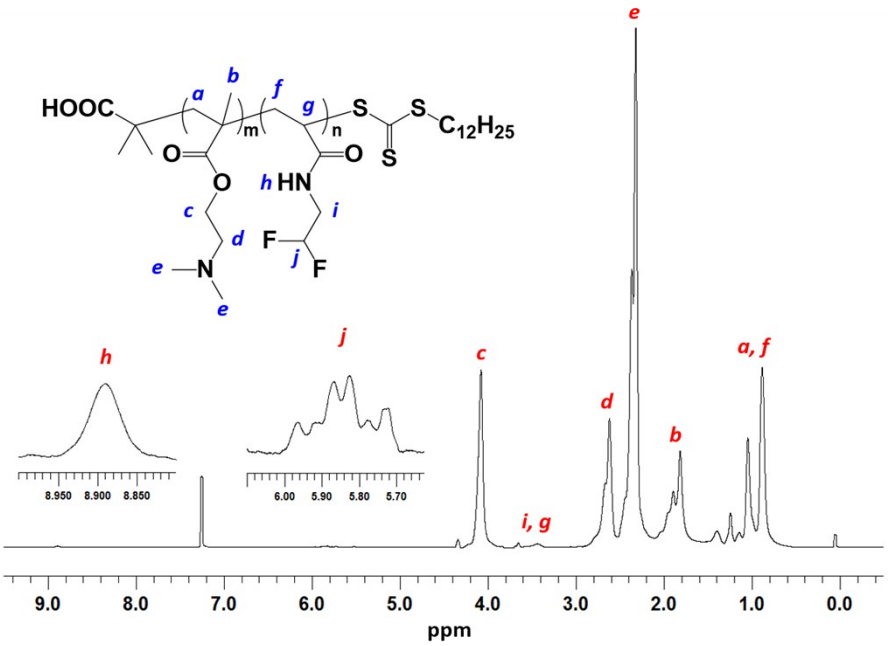

Figure S7. *^{1}H NMR spectra of P(DMA-co-F2EA)-5 in $CDCl_3$.*

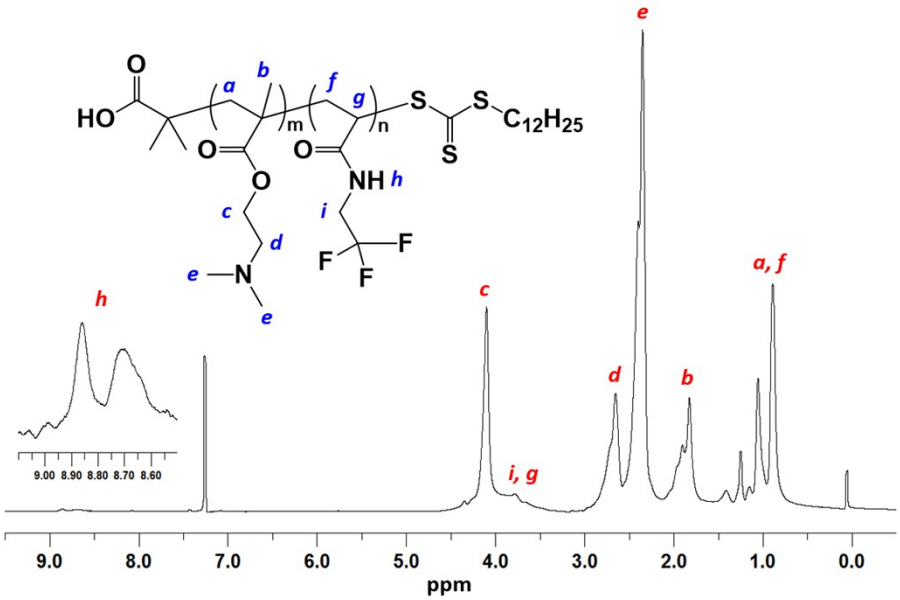

Figure S8. *^{1}H NMR spectra of P(DMA-co-F3EA)-5 in $CDCl_3$.*

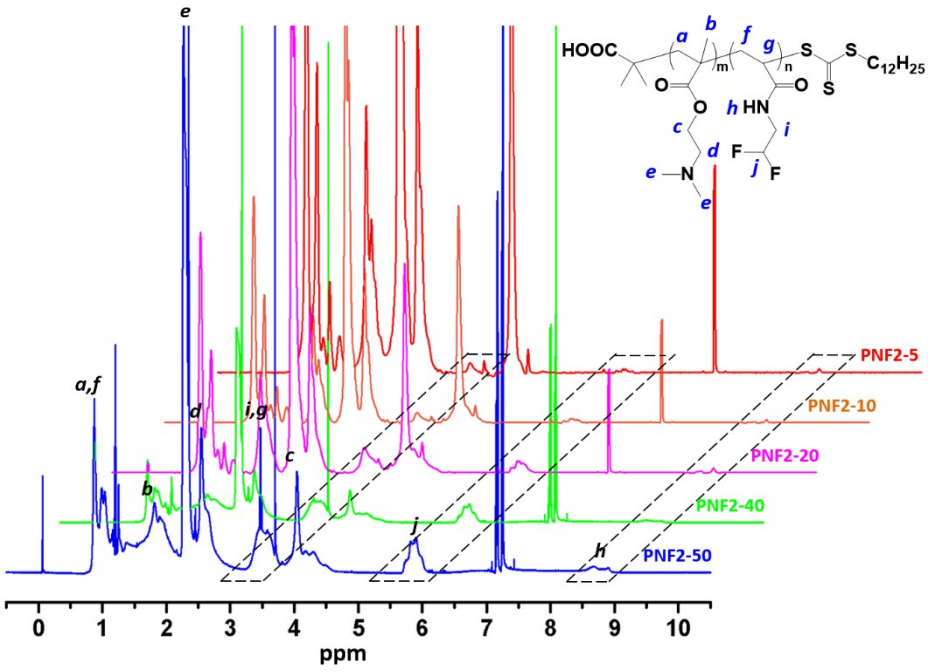

Figure S9. *^{1}H NMR spectra of P(DMA-co-F2EA) with 5, 10, 20,40, 50 mol% F2EA content in $CDCl_3$. (PNF2-5, PNF2-10, PNF2-20, PNF2-40, PNF2-50)*

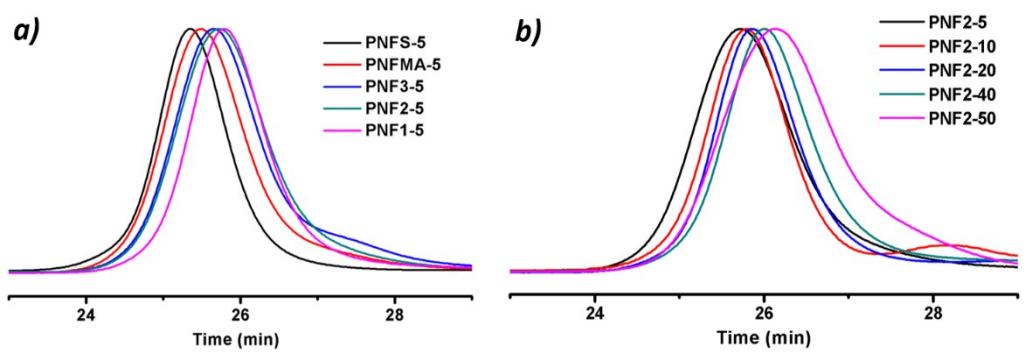

Figure S10. *GPC characterization of a) P(DMA-co-FMs) with 5 mol% of different fluorinated monomers (FS, FMA, F1EA, F2EA, F3EA) and b) P(DMA-co-F2EA) with 5, 10, 20,40, 50 mol% F2EA content in $CDCl_3$. (PNF2-5, PNF2-10, PNF2-20, PNF2-40, PNF2-50), the molecular weight and polydispersity of all the random copolymers were listed in Table-1.*

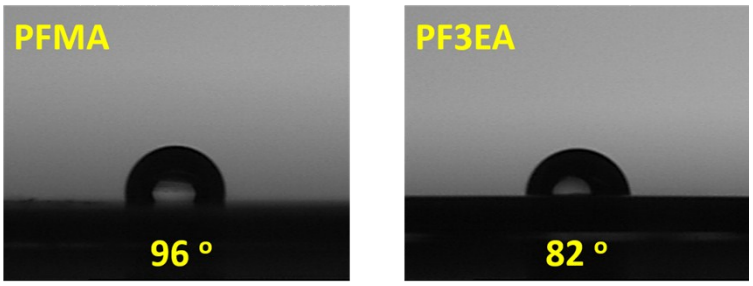

Figure S11. *Water contact angle of the PFMA and PF3EA homopolymer films.*