Supporting Information for

“Oxygen-switchable thermo-responsive random copolymers”

Lei Lei,1 Qi Zhang,2 Shuxian Shi,3,* Shiping Zhu1,*

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. 1H NMR spectra of fluorinated acrylamides (F1EA, F2EA, F3EA) in CDCl3.
**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. (Polarity: +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 CDCl₃. (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.