Electronic Supplementary Material (ESI) for Polymer Chemistry.

One-pot Synthesis of Poly(Vinylidene Fluoride)Methacrylate Macromonomer via *thia*-Michael addition

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SUPPORTING INFORMATION

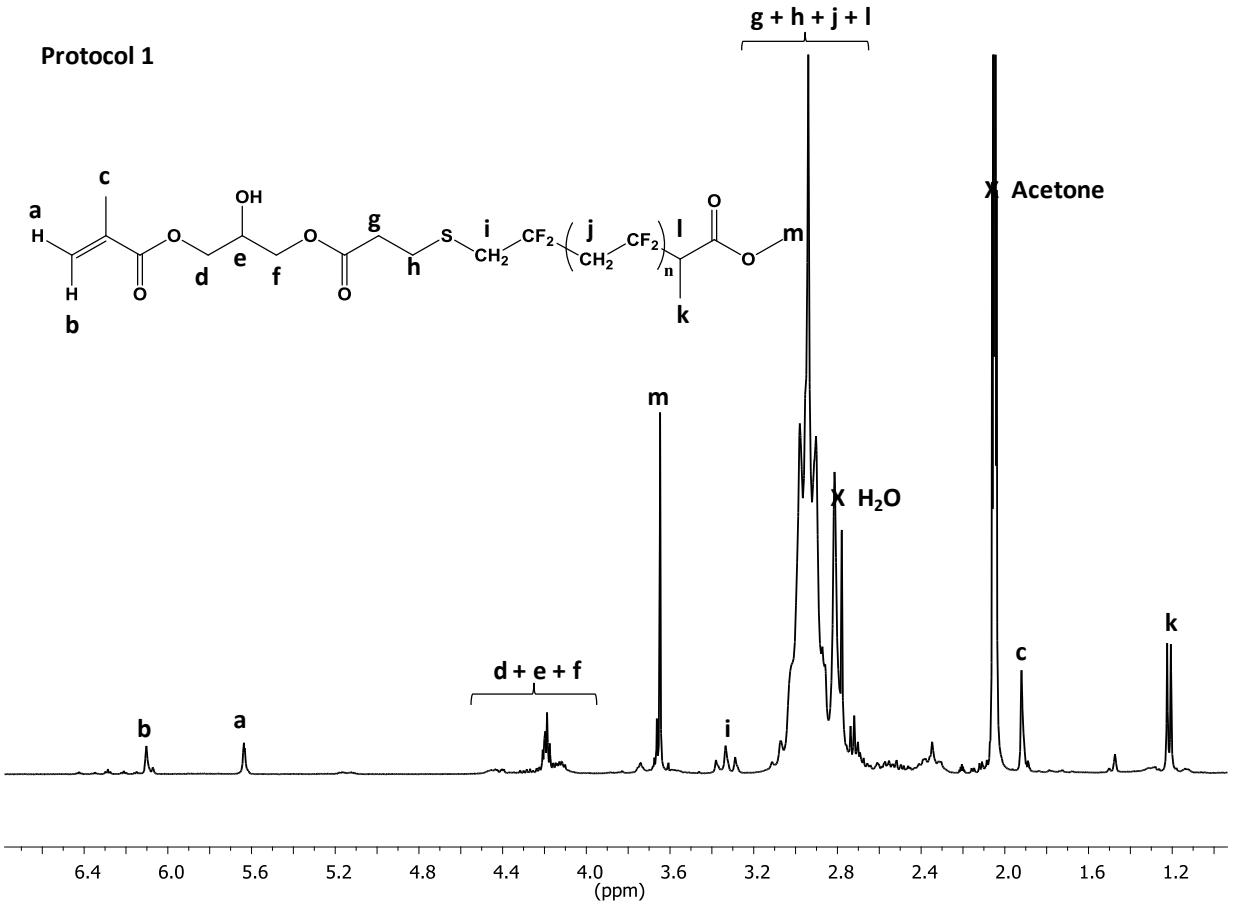

Figure S1. ^{1}H NMR spectrum (with signal assignment) in $(CD_3)_2CO$ of PVDF-MA macromonomer synthesized using protocol 1.

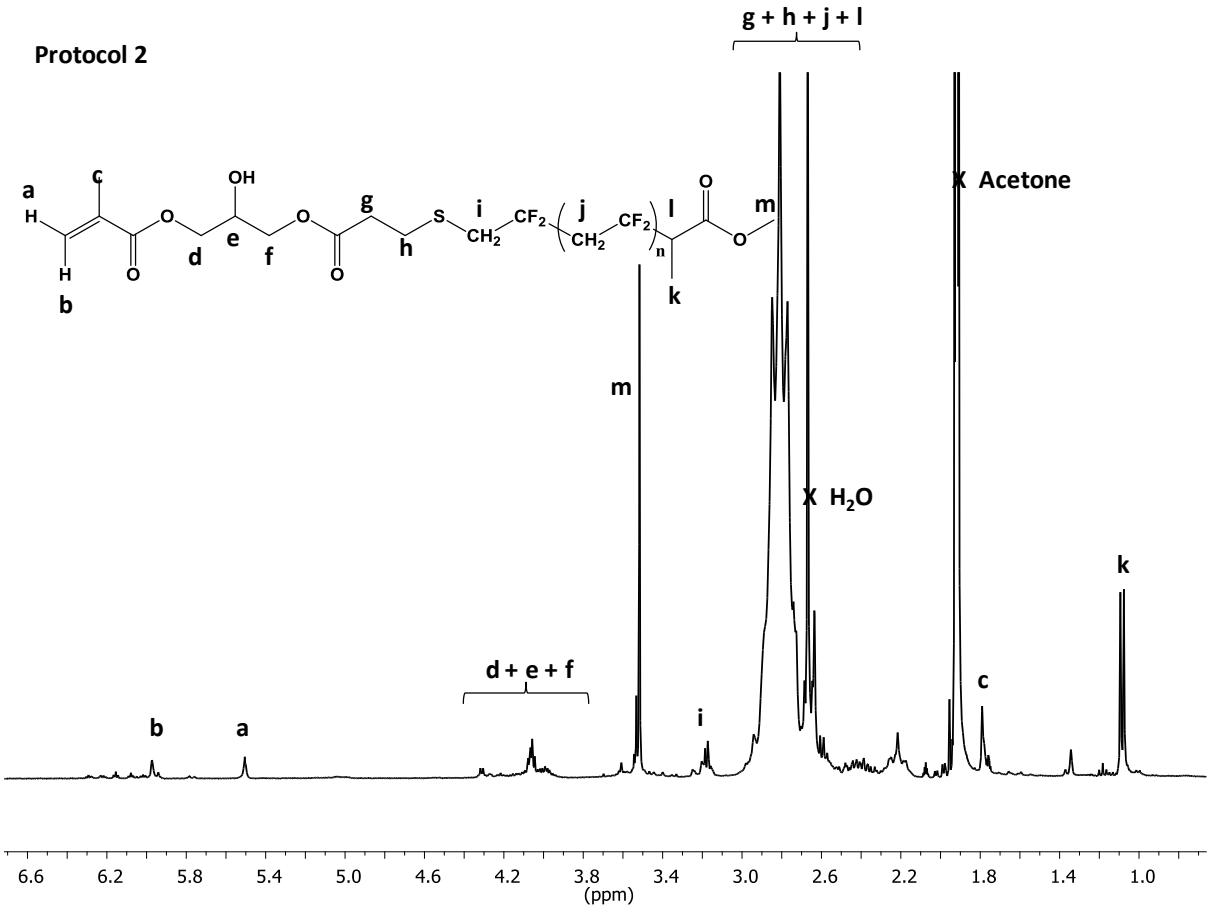

Figure S2. ^{1}H NMR spectrum (with signal assignments) in $(CD_3)_2CO$ the PVDF-MA macromonomer synthesized using protocol 2.

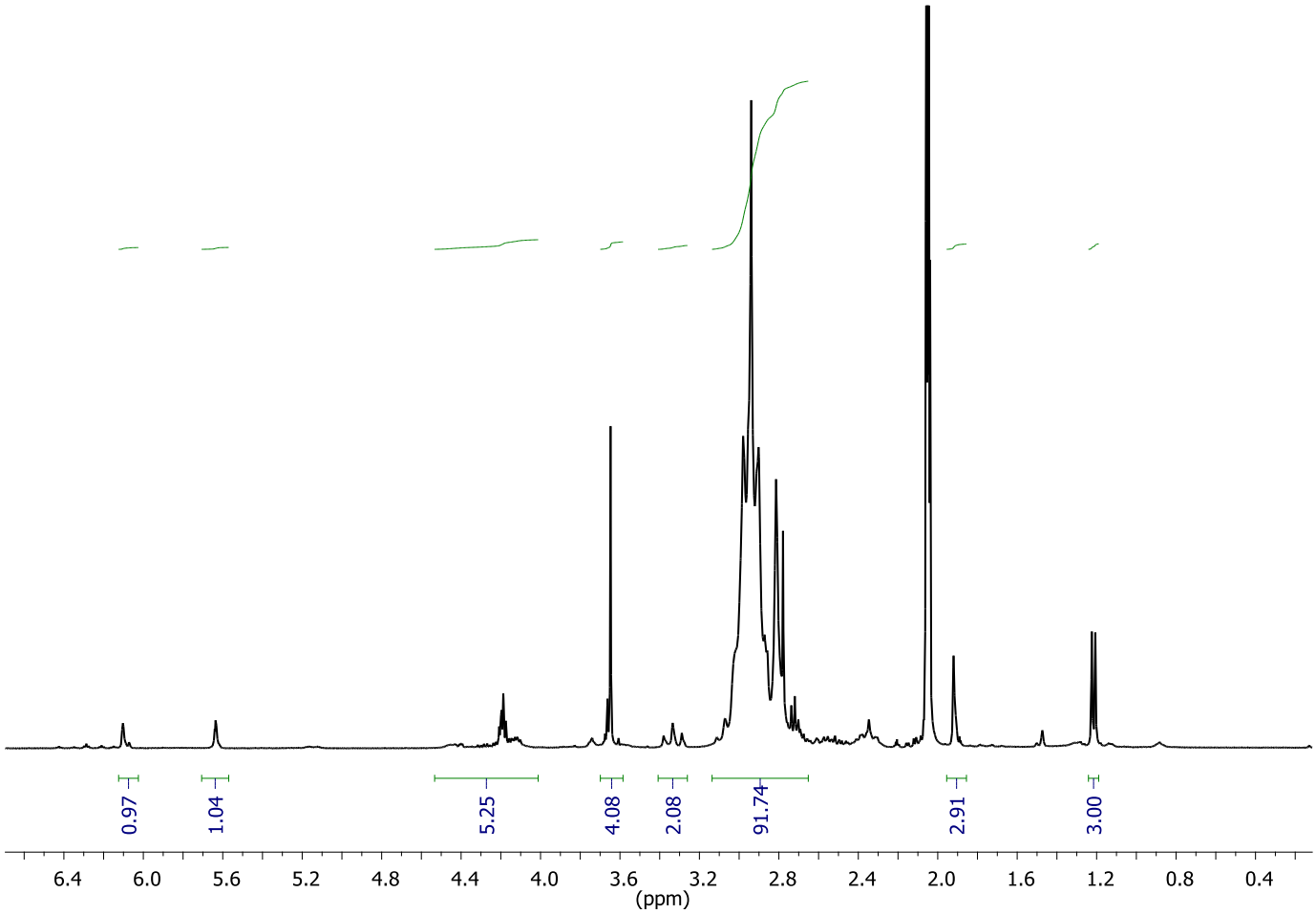

Figure S3. Integration of the ^{1}H NMR spectrum signals of the PVDF-MA synthesized using protocol 1.

$$\text{Assessment of Functionality (\%)} = \frac{\int_{6.04}^{6.13}(\text{H}) + \int_{5.56}^{5.68}(\text{H}) + \int_{1.86}^{1.96}(\text{CH}_3)}{\frac{5}{3}\int_{1.18}^{1.25}(\text{CH}_3)} \times \alpha$$

$$= \frac{0.97 + 1.04 + 2.91}{\frac{5}{3} \times 3.00} \times 0.86 = 85\ \%$$

$$\text{Determination of Coupling efficiency (\%)} = \frac{\int_{6.04}^{6.13}(\text{H}) + \int_{5.56}^{5.68}(\text{H}) + \int_{1.86}^{1.96}(\text{CH}_3)}{\frac{5}{3}\int_{1.18}^{1.25}(\text{CH}_3)}$$

$$= \frac{0.97 + 1.04 + 2.91}{\frac{5}{3} \times 3.00} = 99\ \%$$

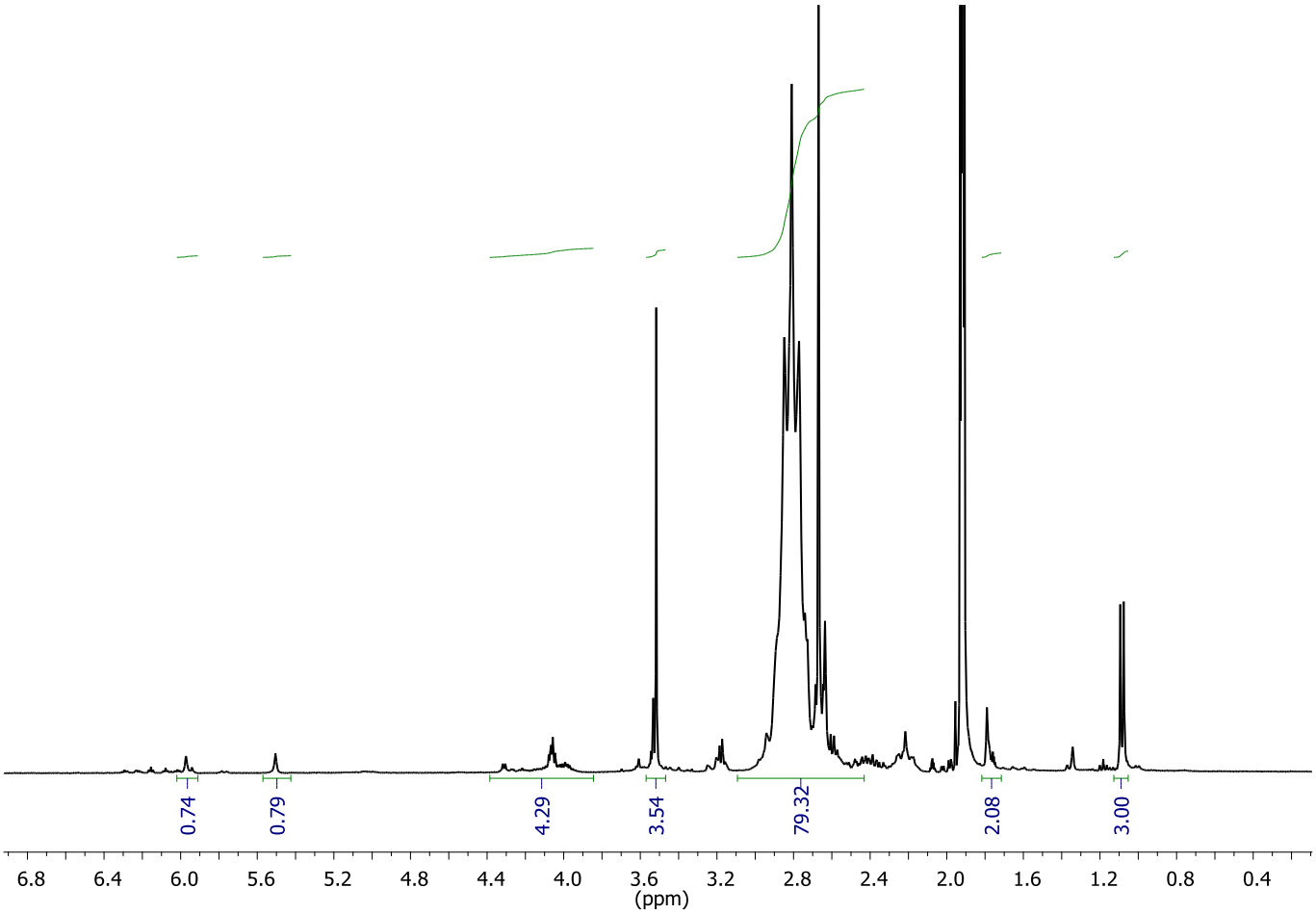

Figure S4. Integration of the ^{1}H NMR spectrum signals of the PVDF-MA synthesized using protocol 2.

$$\text{Assessment of Functionality (\%)} = \frac{\int_{6.04}^{6.13}(\text{H}) + \int_{5.56}^{5.68}(\text{H}) + \int_{1.86}^{1.96}(\text{CH}_3)}{\frac{5}{3}\int_{1.18}^{1.25}(\text{CH}_3)} \times \alpha$$

$$= \frac{0.74 + 0.79 + 2.08}{\frac{5}{3} \times 3.00} \times 0.86 = 62\ \%$$

$$\text{Determination of Coupling efficiency (\%)} = \frac{\int_{6.04}^{6.13}(\text{H}) + \int_{5.56}^{5.68}(\text{H}) + \int_{1.86}^{1.96}(\text{CH}_3)}{\frac{5}{3}\int_{1.18}^{1.25}(\text{CH}_3)}$$

$$= \frac{0.74 + 0.79 + 2.08}{\frac{5}{3} \times 3.00} \times 0.86 = 72\ \%$$

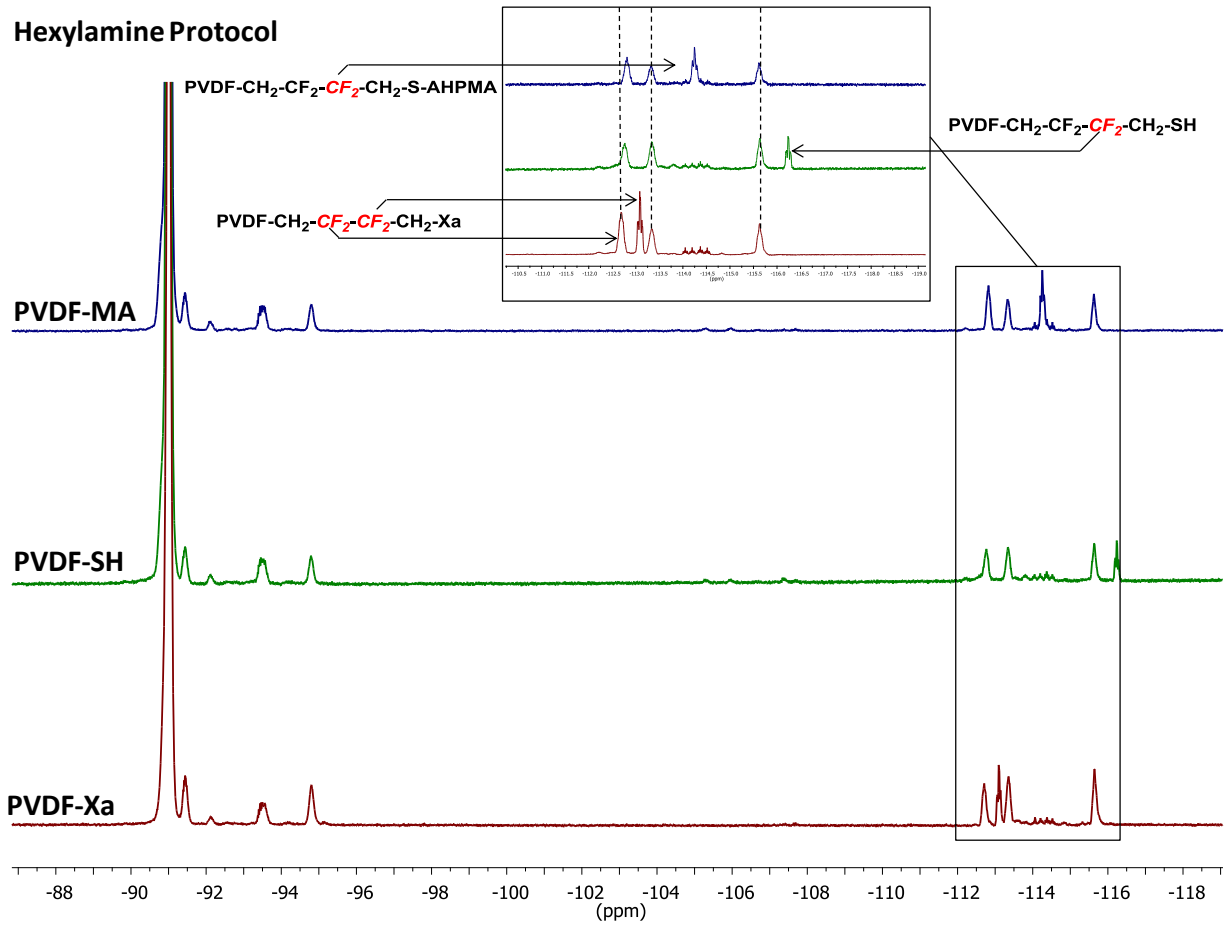

Figure S5. ^{19}F NMR spectra in $(CD_3)CO$ of: PVDF-XA, PVDF-SH synthesized via aminolysis using hexylamine, and of PVDF-MA prepared following protocol 1.

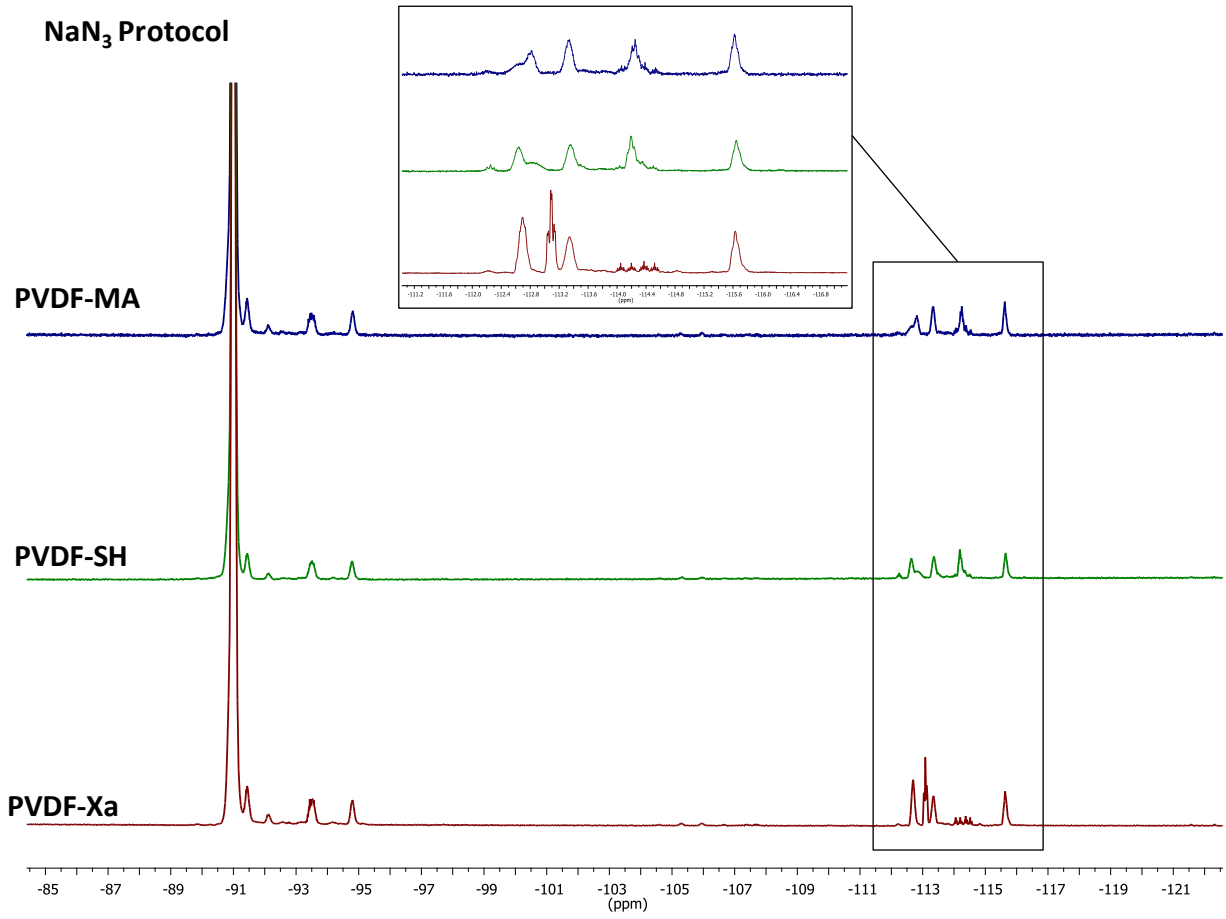

Figure S6. ^{19}F NMR spectra in $(CD_3)CO$ of: PVDF-XA, PVDF-SH synthesized using NaN_3 as end-group removal agent, and of PVDF-MA prepared following protocol 2.

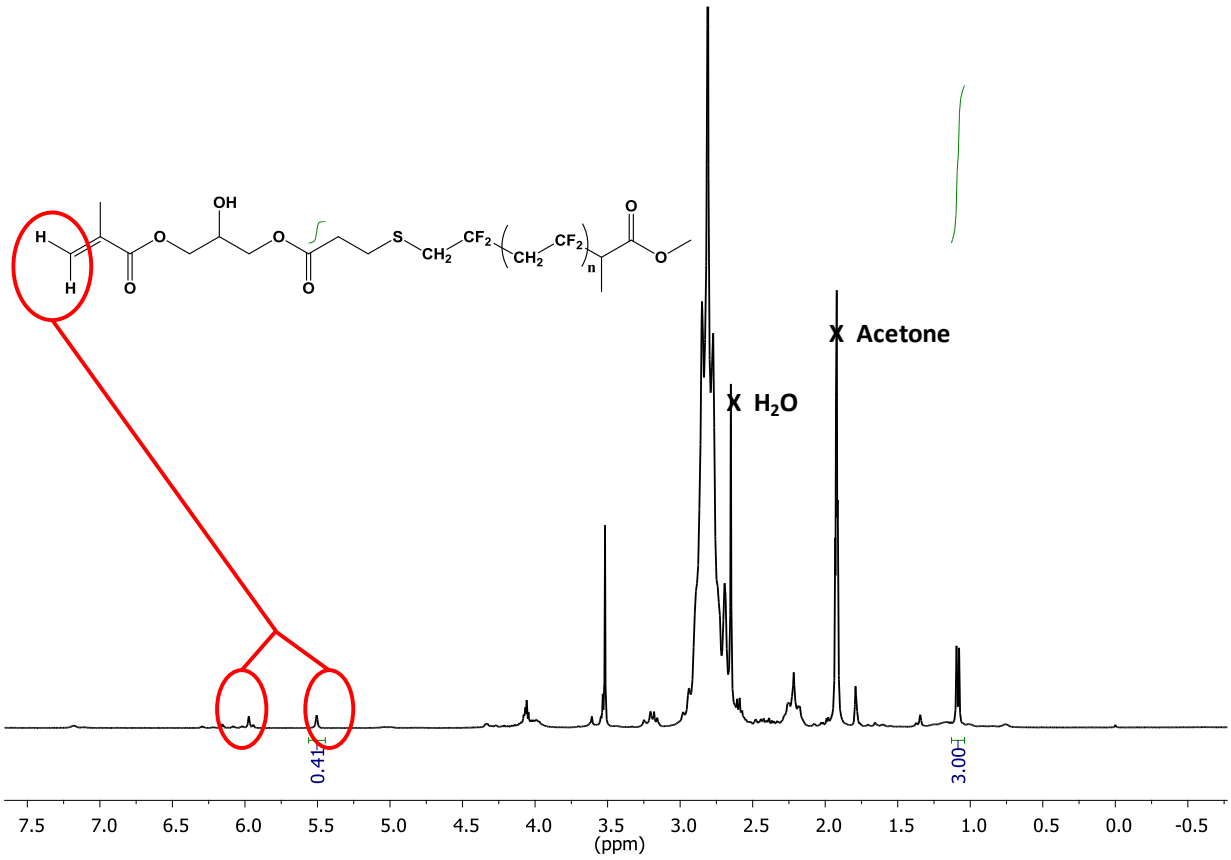

Figure S7. ^{1}H NMR spectrum in $(CD_3)_2CO$ of PVDF-MA homopolymer prepared by RAFT polymerization.

$$Conversion = 1 - \frac{\int_{5.60}^{5.68} \boldsymbol{H}CH{=}C(CH_3)\ Methacrylate\ end\ group}{\frac{1}{3}\times \int_{1.19}^{1.24} C\boldsymbol{H}_3{-}CH\ R\ CTA\ end\ group} = 1 - \frac{0.41}{\frac{1}{3}\times 3.00} = 59\ \%$$

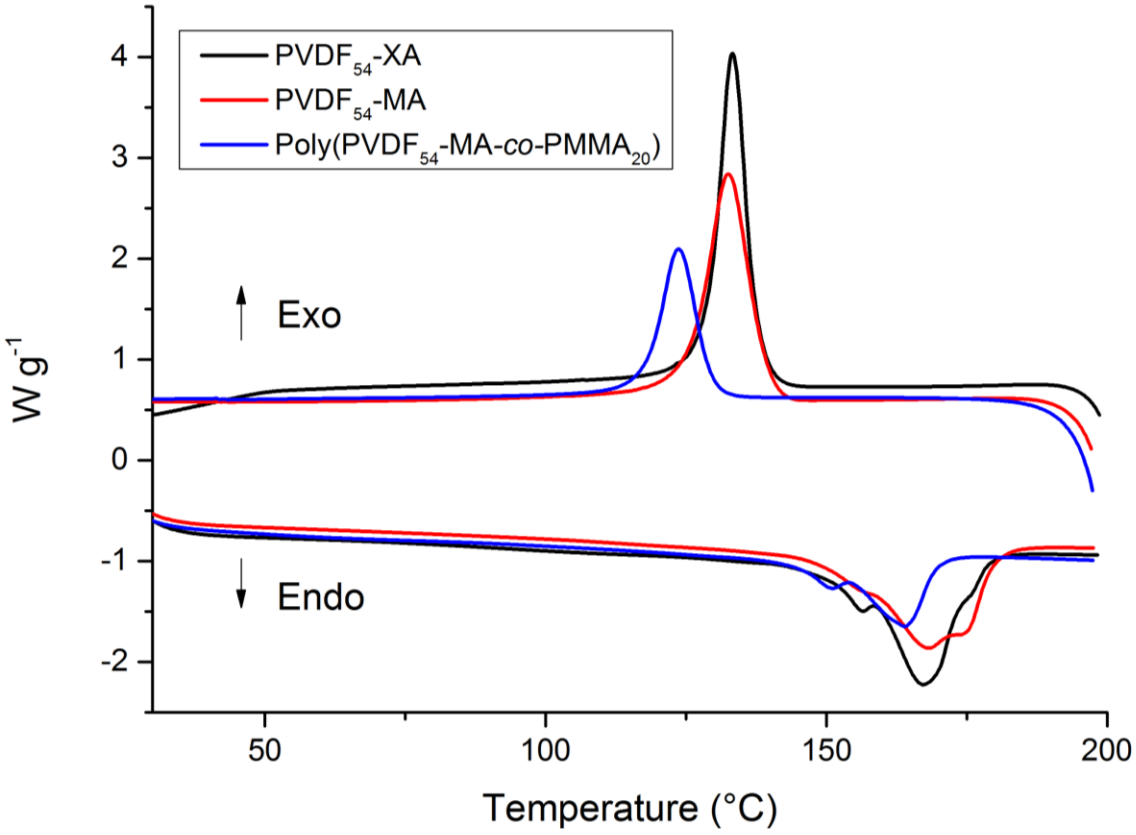

Figure S8. DSC thermogram for PVDF-XA, PVDF-MA synthesized using Protocol 1 and poly(PVDF-MA-*co*-MMA) copolymer.