Electronic Supplementary Material (ESI) for Polymer Chemistry.

Supporting Information

End Group Modification of Poly(acrylates) Obtained via ATRP: A User Guide

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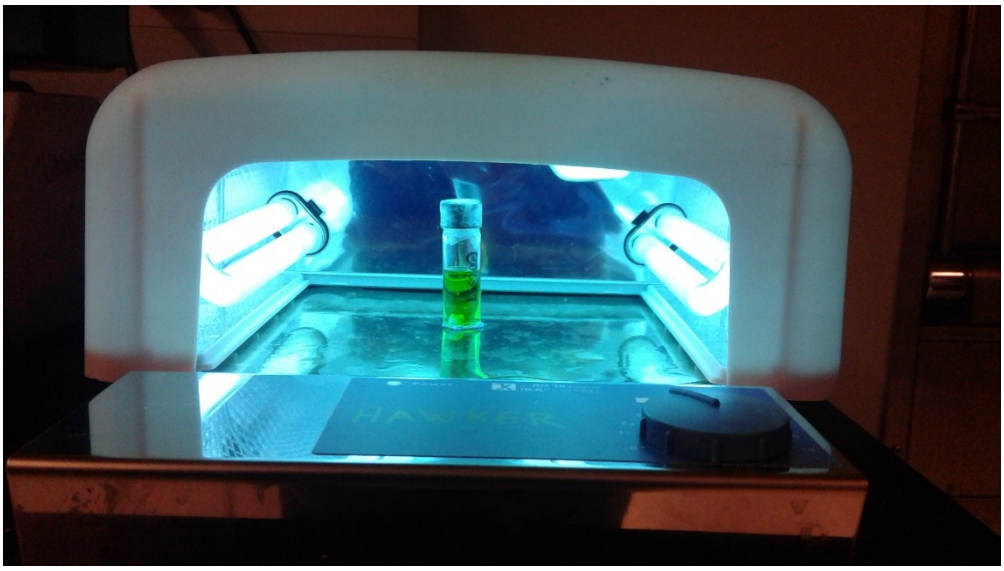


Figure S1: Typical setup of a photo-ATRP using a conventional UV nail gel curing lamp.

Characterization of bromine-terminated poly(MA)

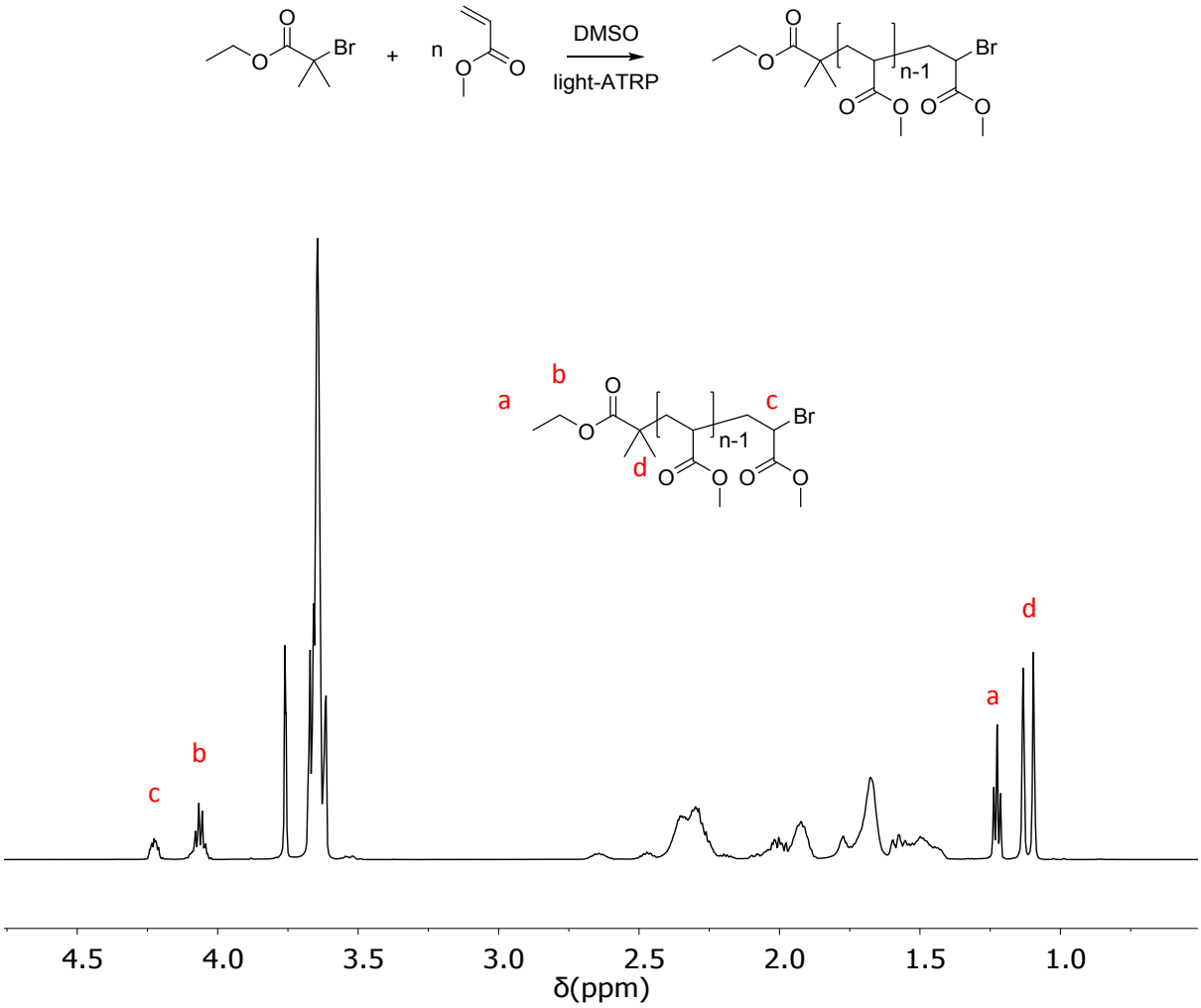


Figure S2: ^{1}H NMR of bromine-terminated poly(MA) (DP = 10) obtained via photo-ATRP.

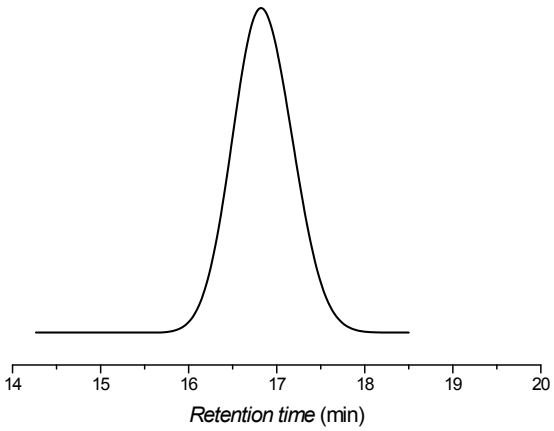


Figure S3: SEC trace of bromine-terminated poly(MA) (DP = 10), M_n = 1100 g mol^{-1}, $Đ$ = 1.10.

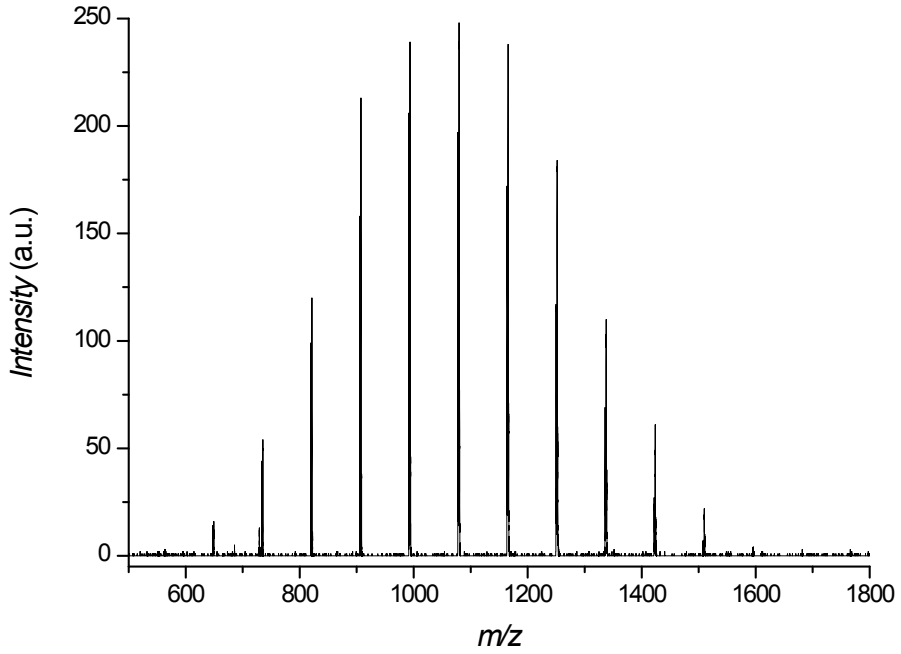


Figure S4a: MALDI-ToF-MS of poly(MA) initiated by EBiB and terminated with bromine.

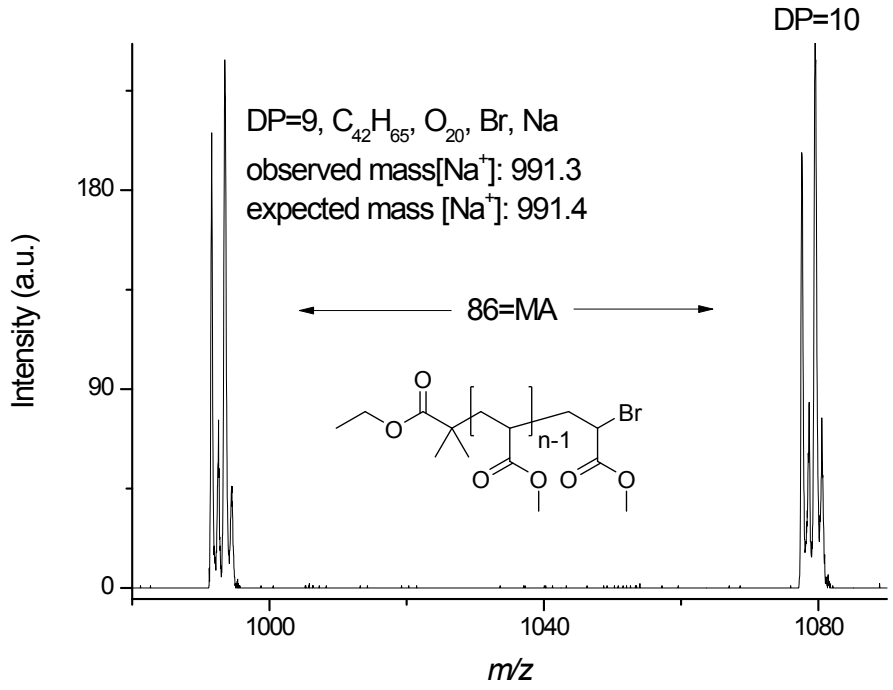


Figure S4b: Expanded MALDI-ToF spectrum of poly(MA) initiated by EBiB and terminated with bromine.

Characterization of lactame-terminated poly(MA)

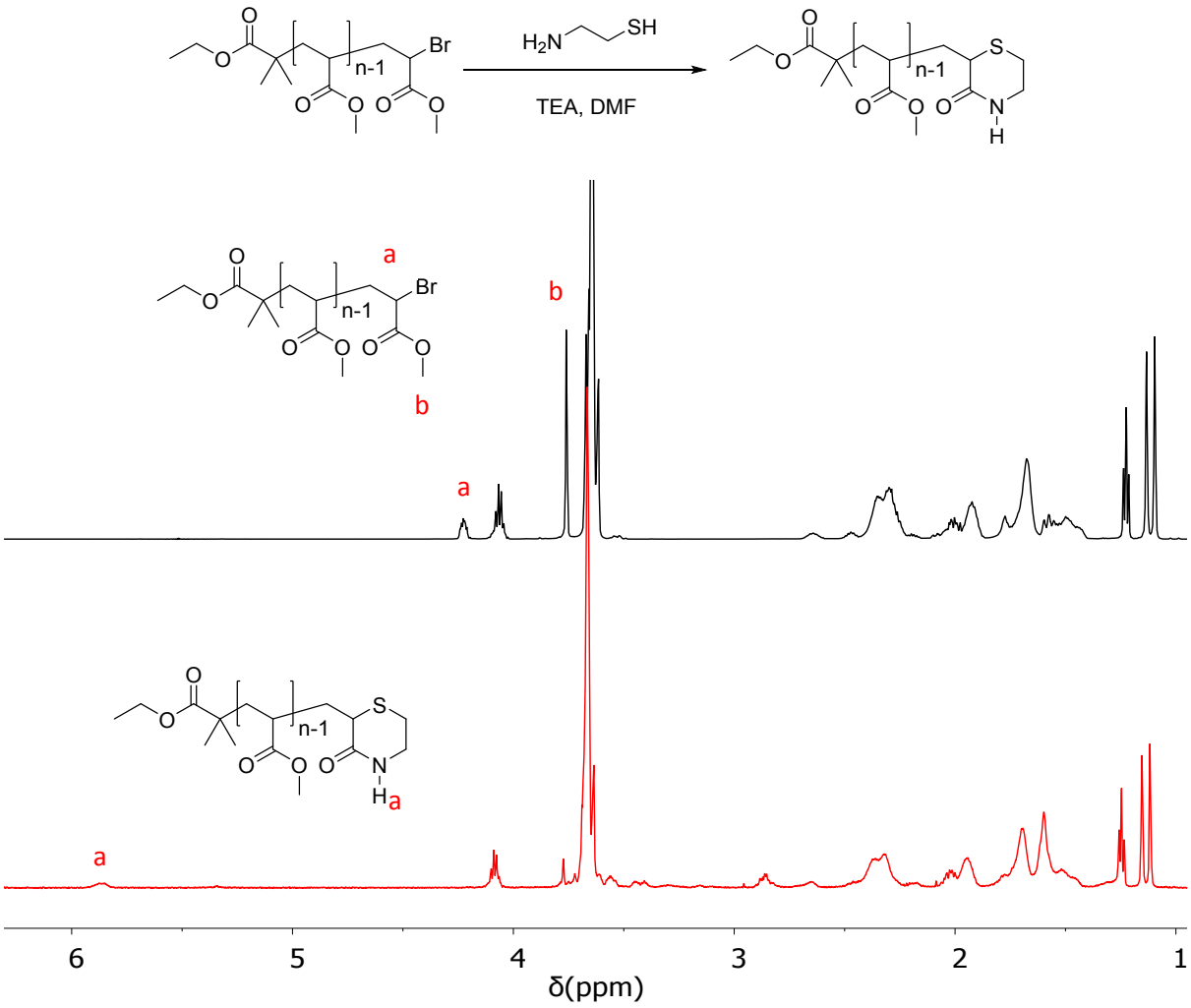


Figure S5: ^{1}H NMR spectra of the transformation of bromine-terminate poly(MA) (top) to lactame-terminated poly(MA) (bottom).

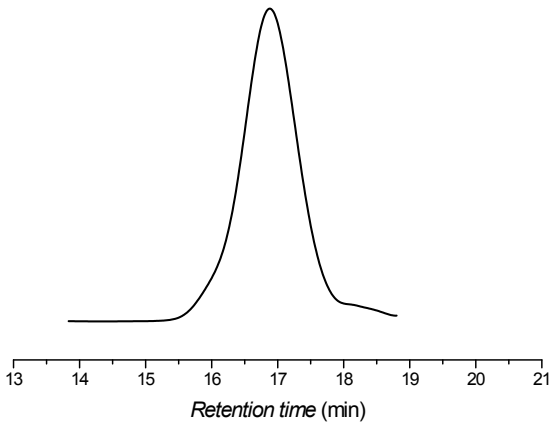


Figure S6: SEC trace of lactame-terminated poly(MA), M_n = 1000 g mol^{-1}, $Đ$ = 1.10.

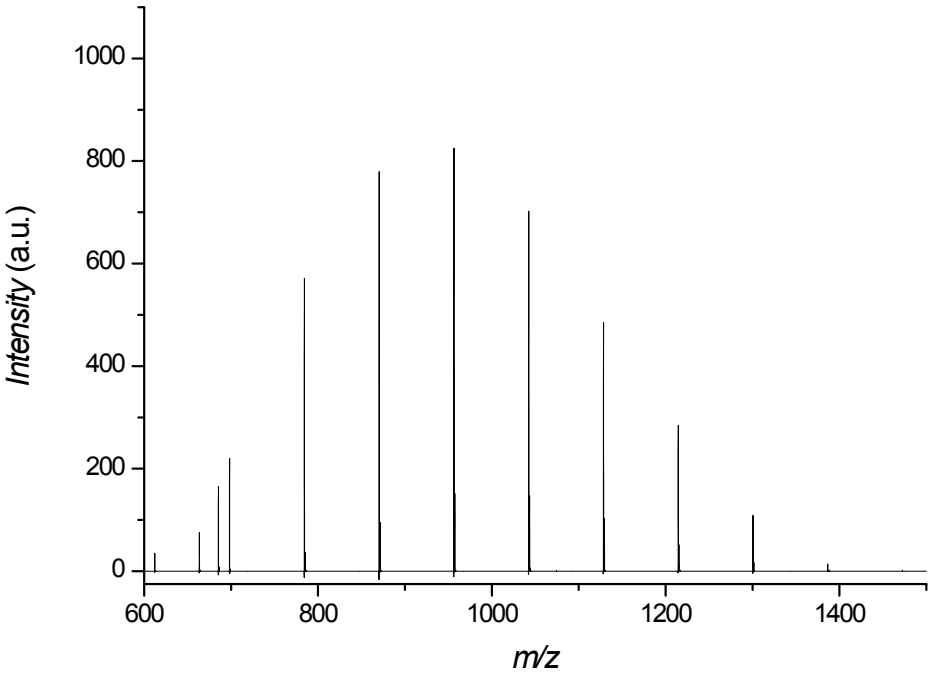


Figure S7a: MALDI-ToF-MS spectrum of lactame-terminated poly(MA).

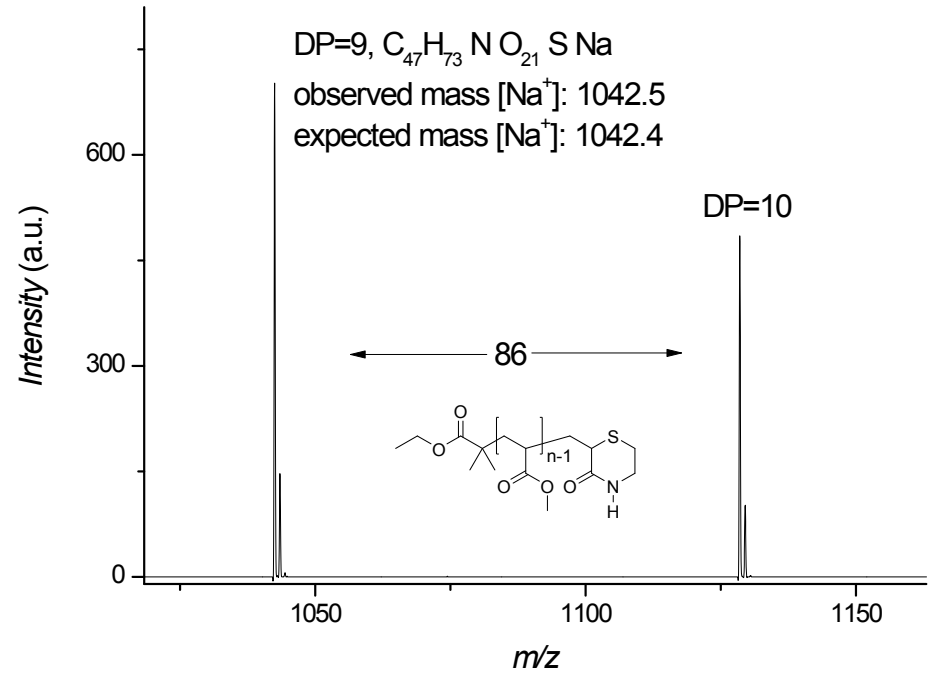


Figure S7b: Expanded MALDI-ToF-MS spectrum of lactame-terminated poly(MA).

Characterization of Boc-protected-amine terminated poly(MA)

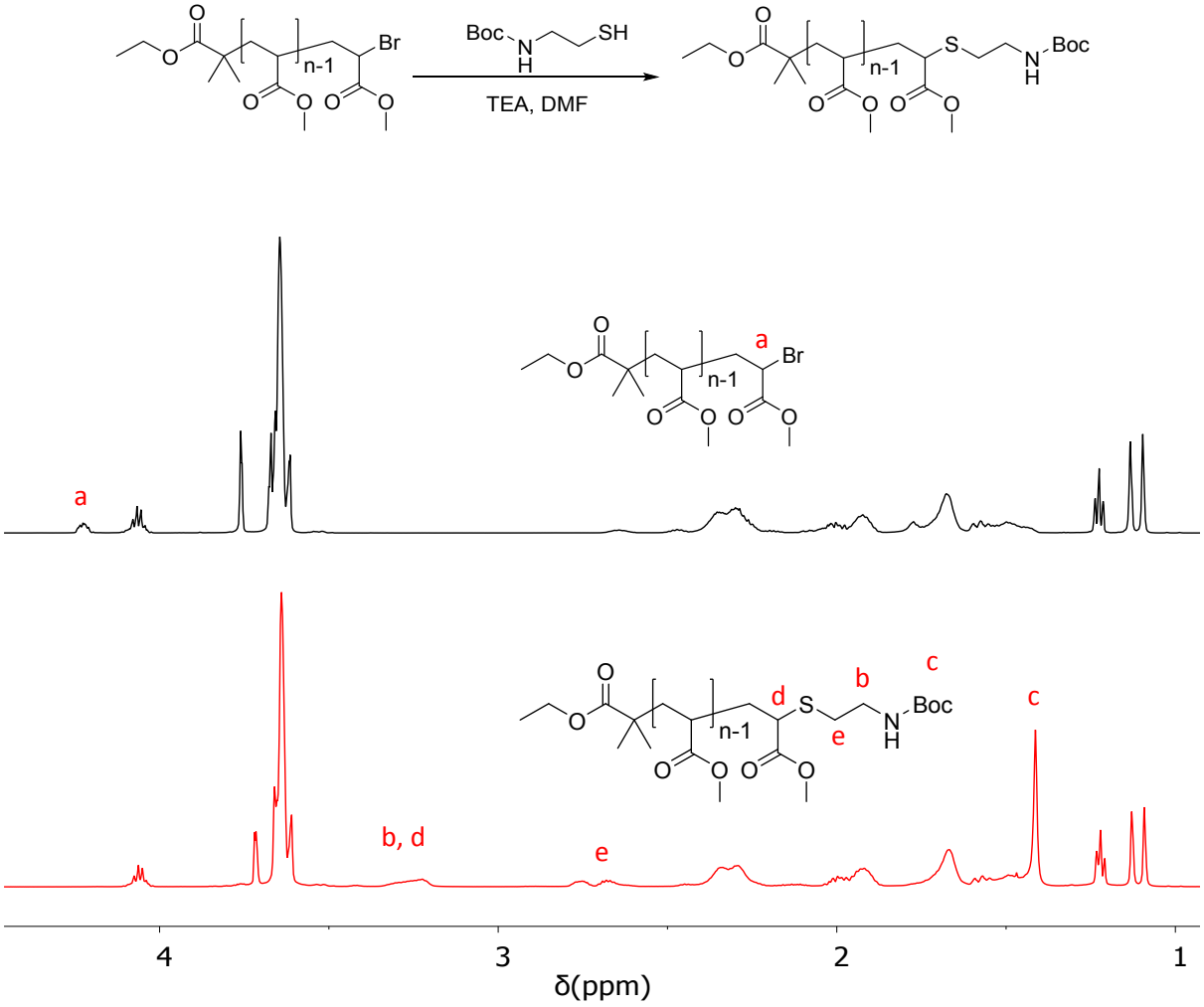


Figure S8: ^{1}H NMR spectra of the transformation from bromine-terminated poly(MA) (top) to Boc-amine-terminated poly(MA) (bottom).

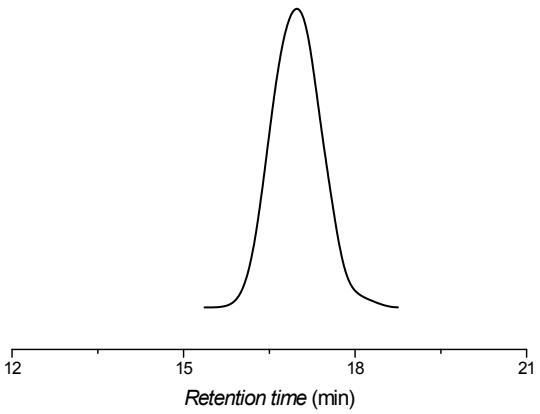


Figure S9: SEC trace of Boc-amine-terminated poly(MA), M_n = 1000 g mol^{-1}, $Đ$ = 1.20.

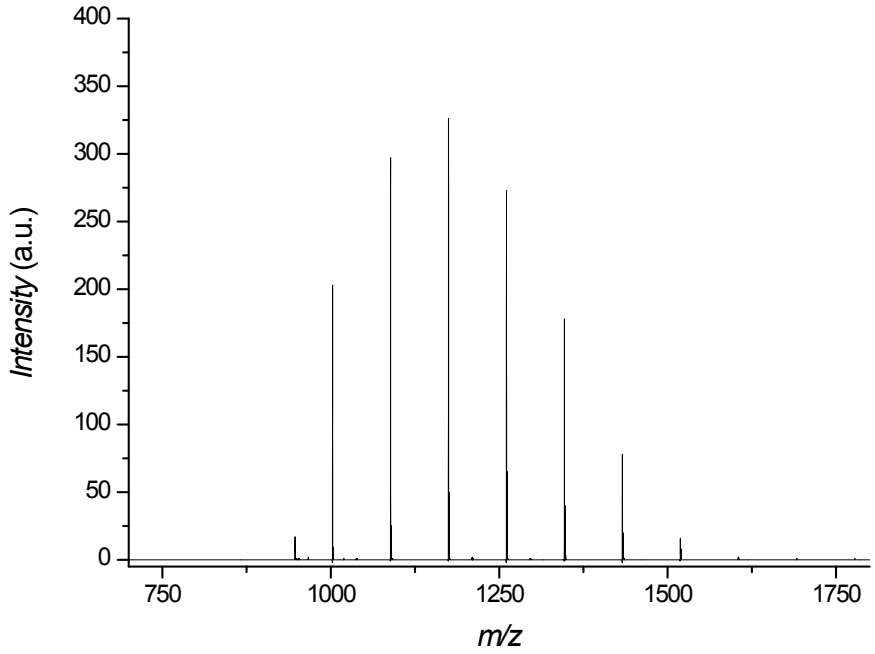


Figure S10a: MALDI-ToF-MS spectrum of Boc-amine-terminated poly(MA).

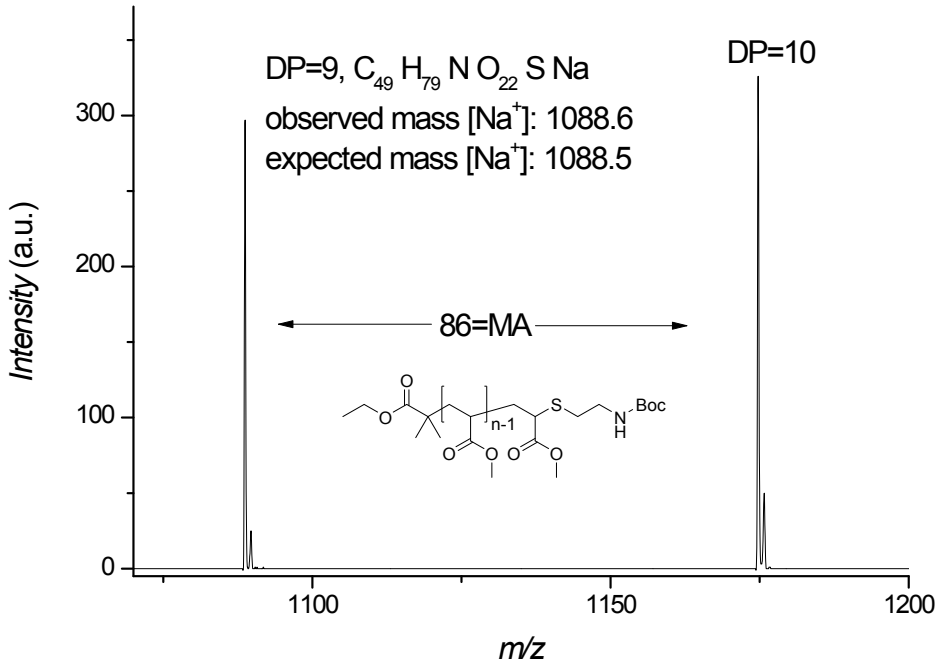


Figure S10b: Expanded of MALDI-ToF-MS spectrum Boc-amine-terminated poly(MA).

Characterization of amine-terminated poly(MA)

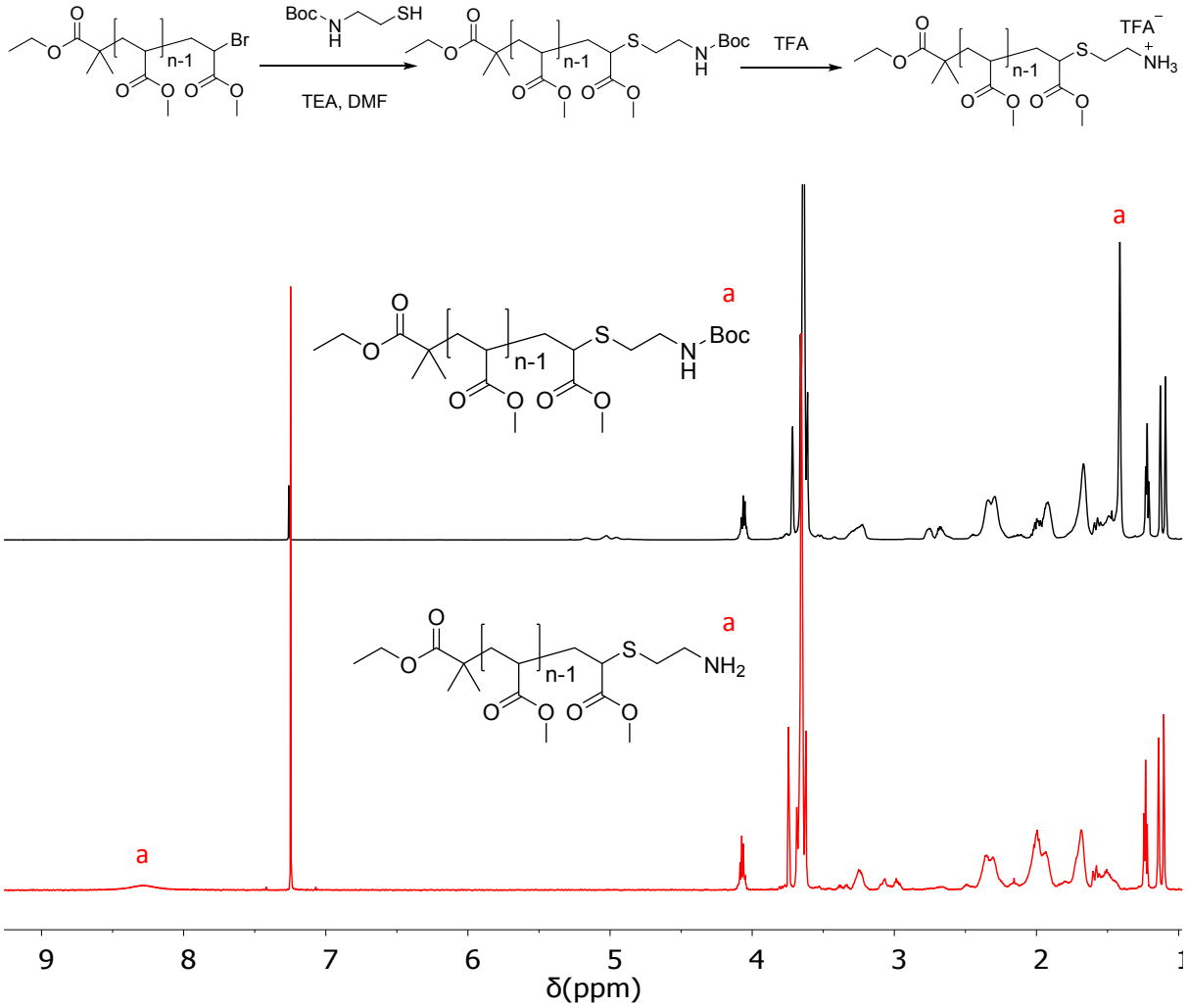


Figure S11: ^{1}H NMR spectra of the transformation from the Boc-amine-terminated poly(MA) (top) to amine-terminated poly(MA) (bottom).

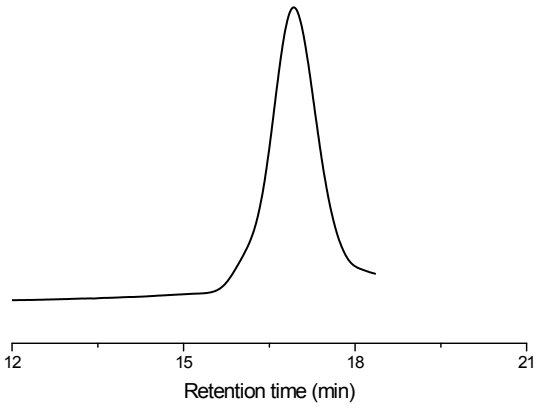


Figure S12: SEC trace of amine-terminated poly(MA), M_n = 1100 g mol^{-1}, $Đ$ = 1.20.

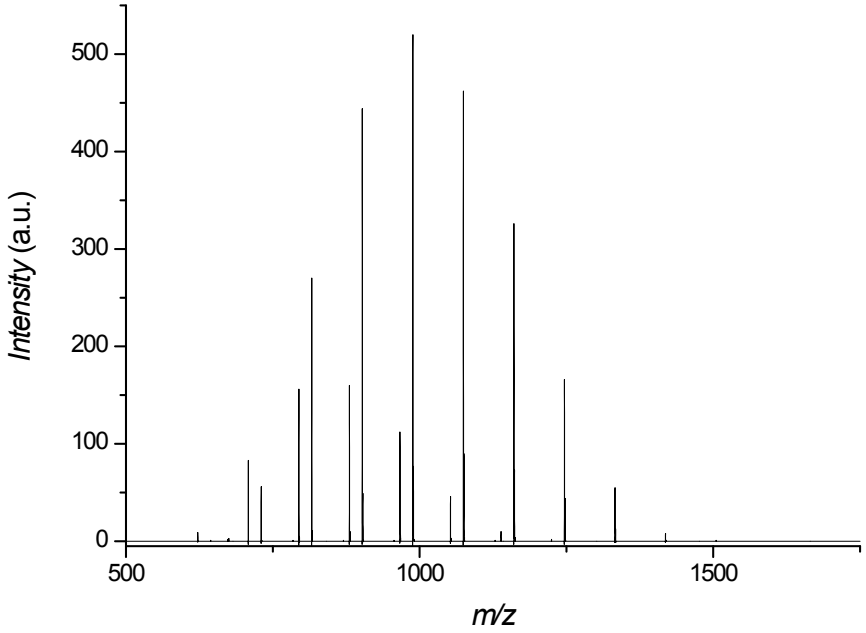


Figure S13a: MALDI-ToF-MS spectrum of amine-terminated poly(MA).

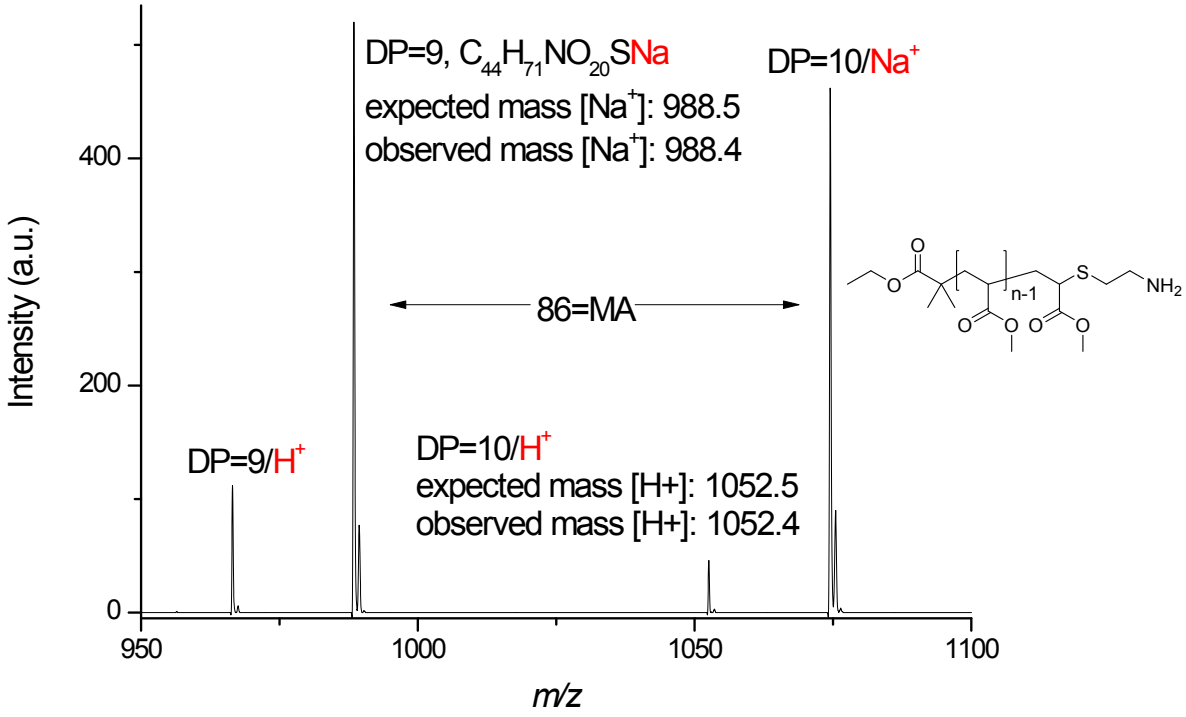


Figure S13b: Expanded MALDI-ToF-MS spectrum of amine-terminated poly(MA).

Characterization of acetyl-terminated poly(MA)

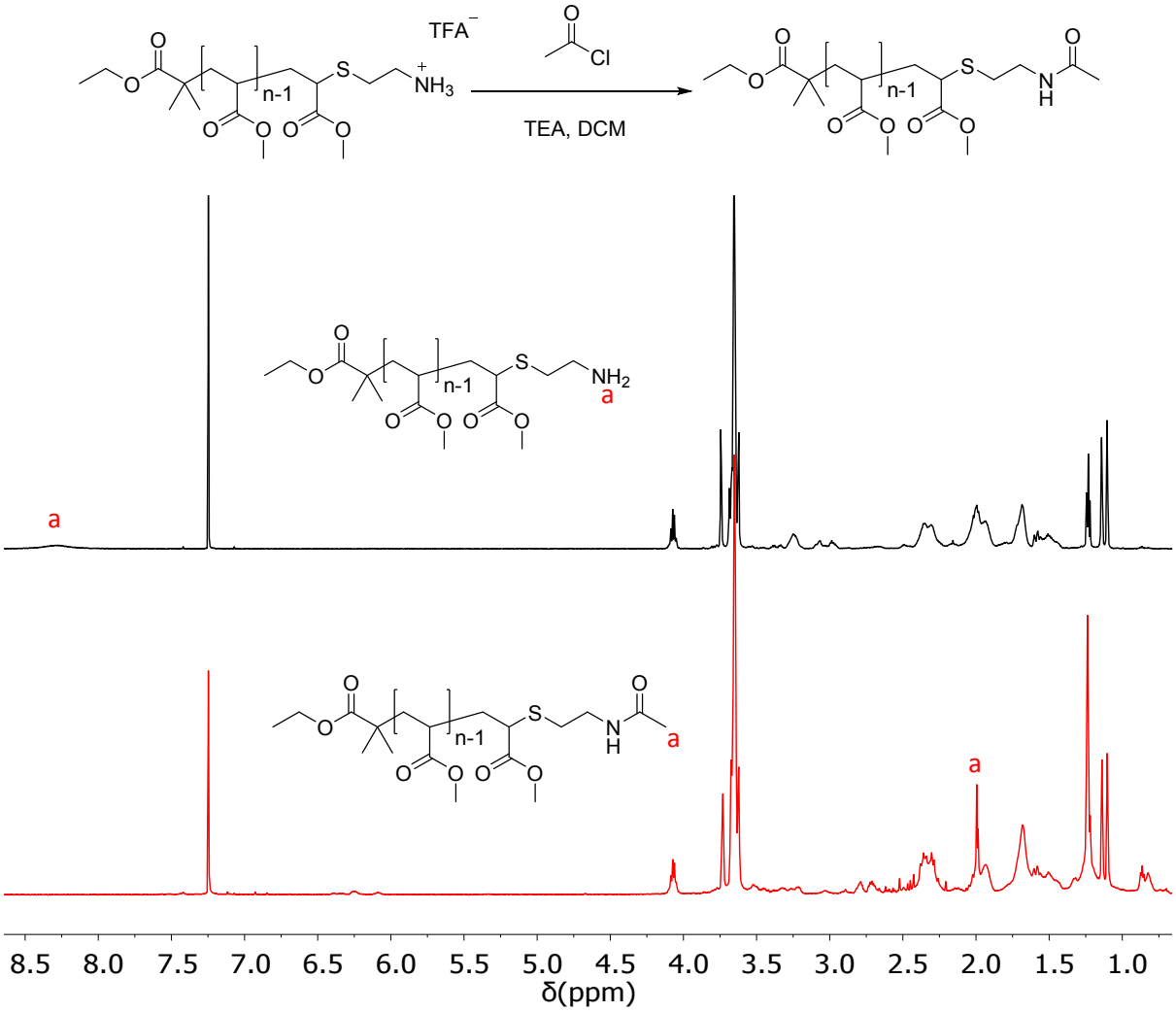


Figure S14: ^{1}H NMR spectra of the reaction from amine-terminated poly(MA) (top) to acetyle-terminated poly(MA) (bottom).

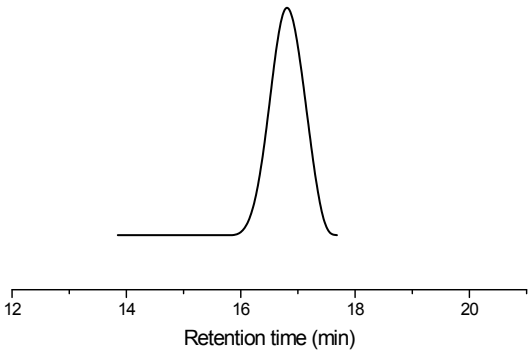


Figure S15: SEC trace of acetyl-terminated poly(MA), M_n = 1200 g mol^{-1}, $Đ$ = 1.15.

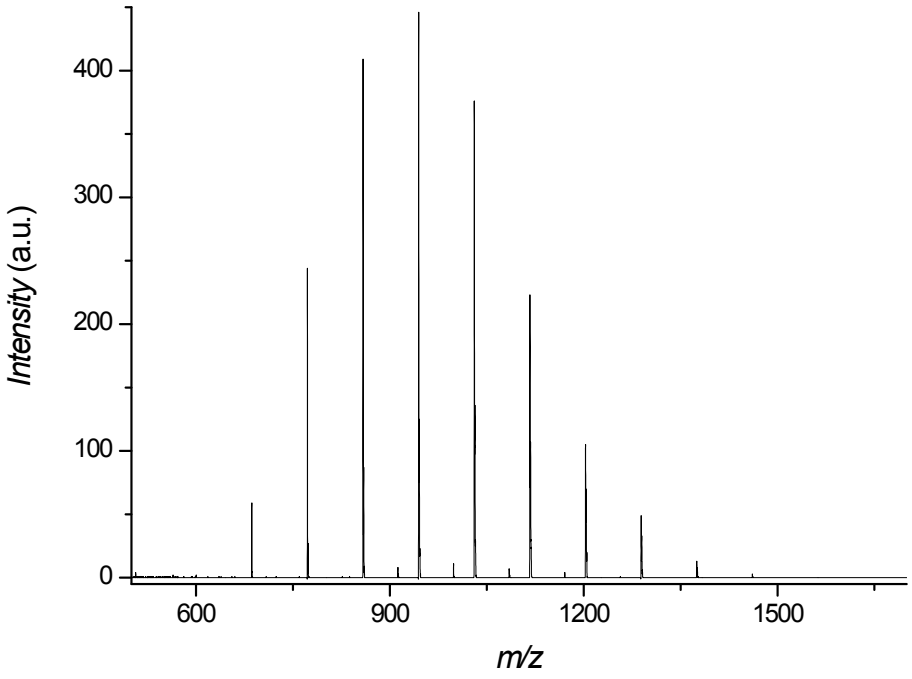


Figure S16a: MALDI-ToF-MS spectrum of acetyl-terminated poly(MA).

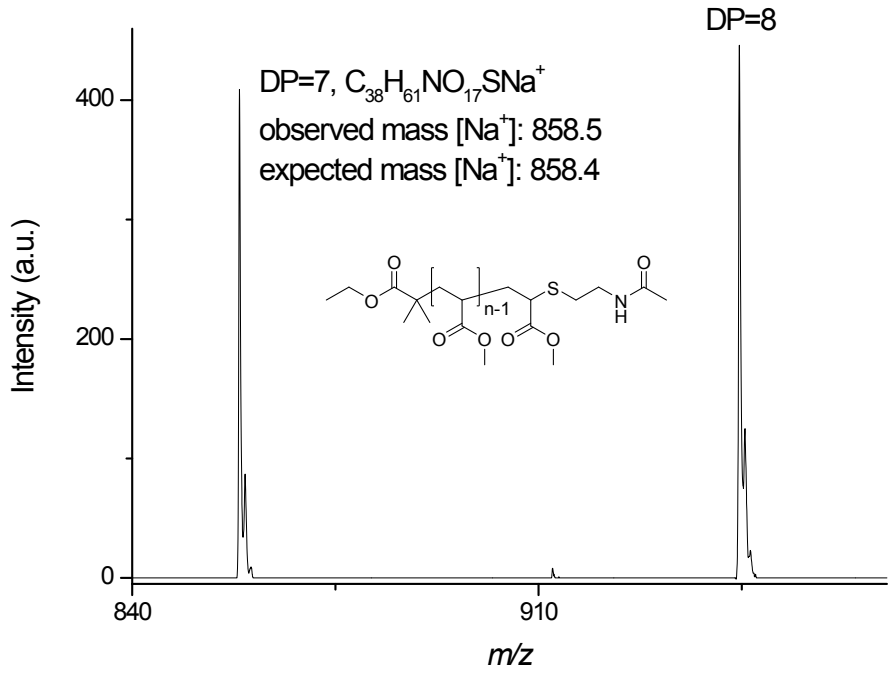


Figure S16b: Expanded MALDI-ToF-MS spectrum of acetyl-terminated poly(MA).

Characterization of hydroxyl-terminated poly(MA)

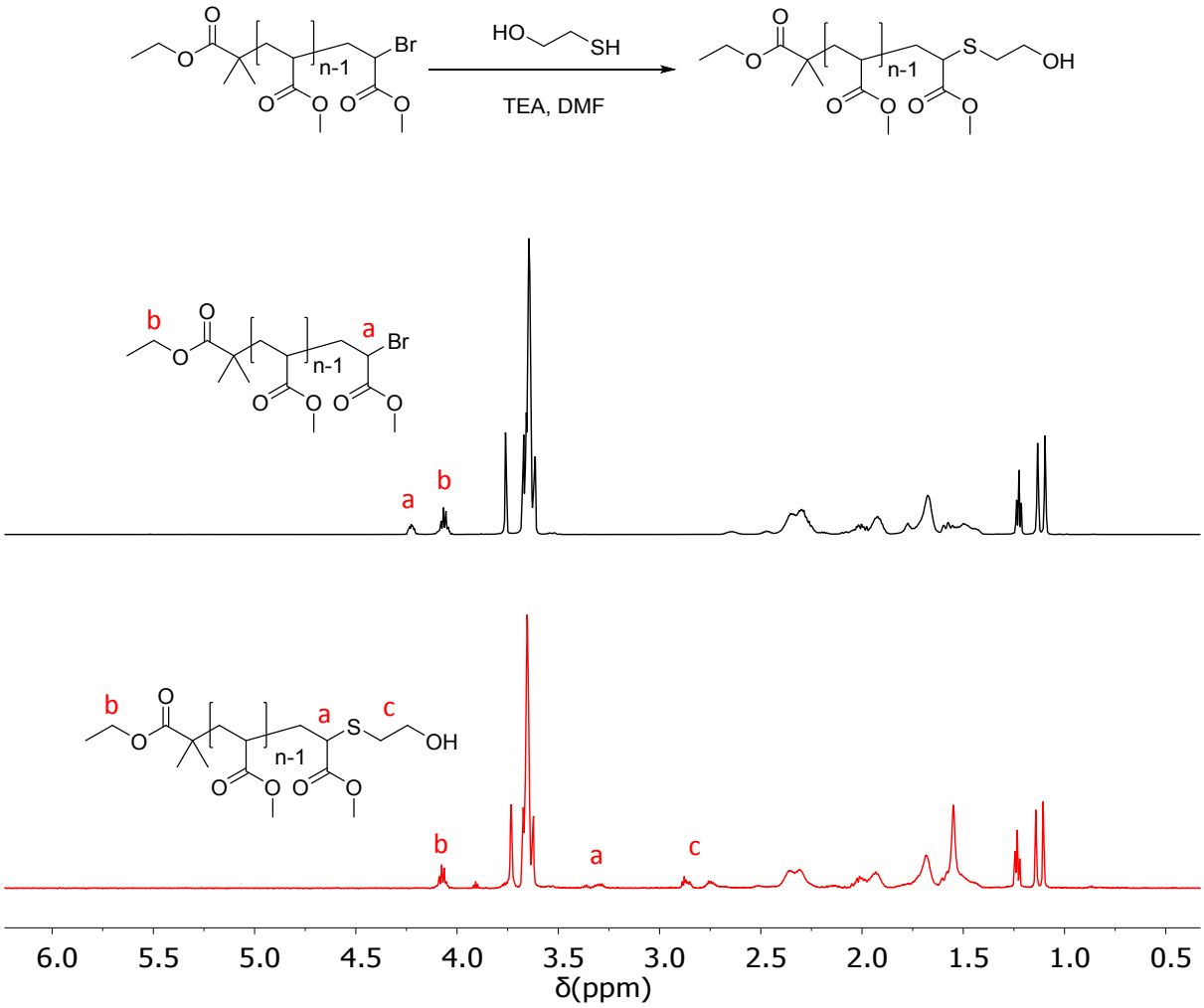


Figure S17: ^{1}H NMR spectra of the reaction from bromine-terminated poly(MA) (top) to hydroxyl-terminated poly(MA) (bottom).

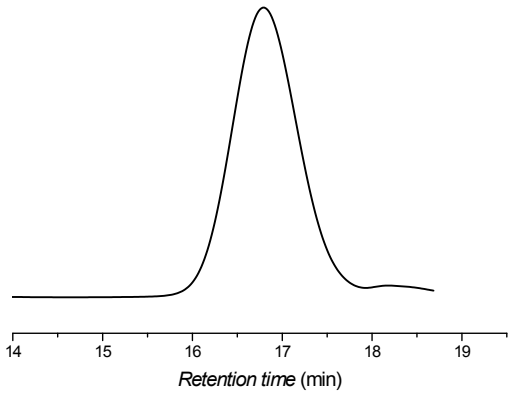


Figure S18: SEC trace of hydroxyl-terminated poly(MA), M_n = 1100 g mol^{-1}, $Đ$ = 1.10.

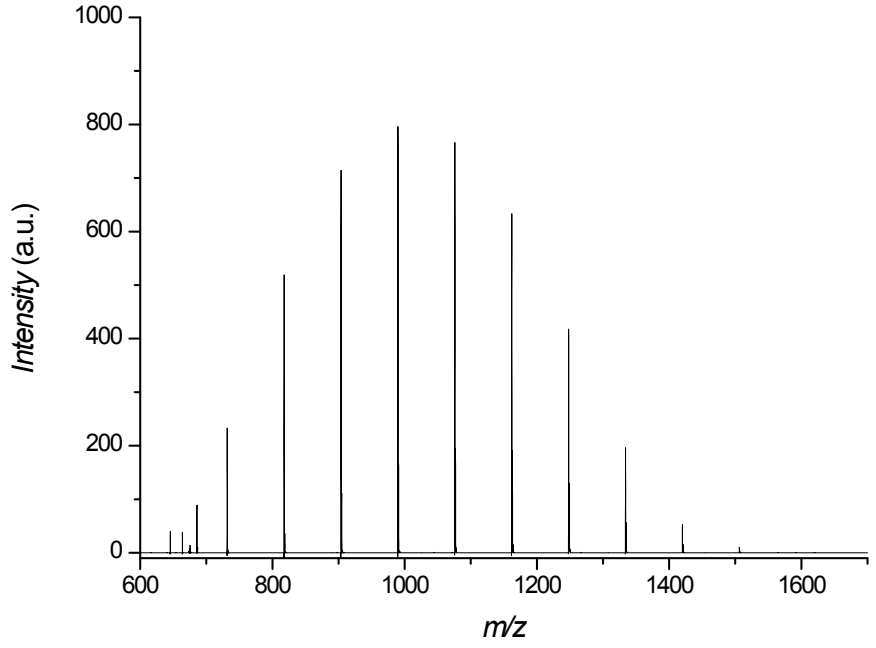


Figure S19a: MALDI-ToF-MS spectrum of hydroxyl-terminated poly(MA).

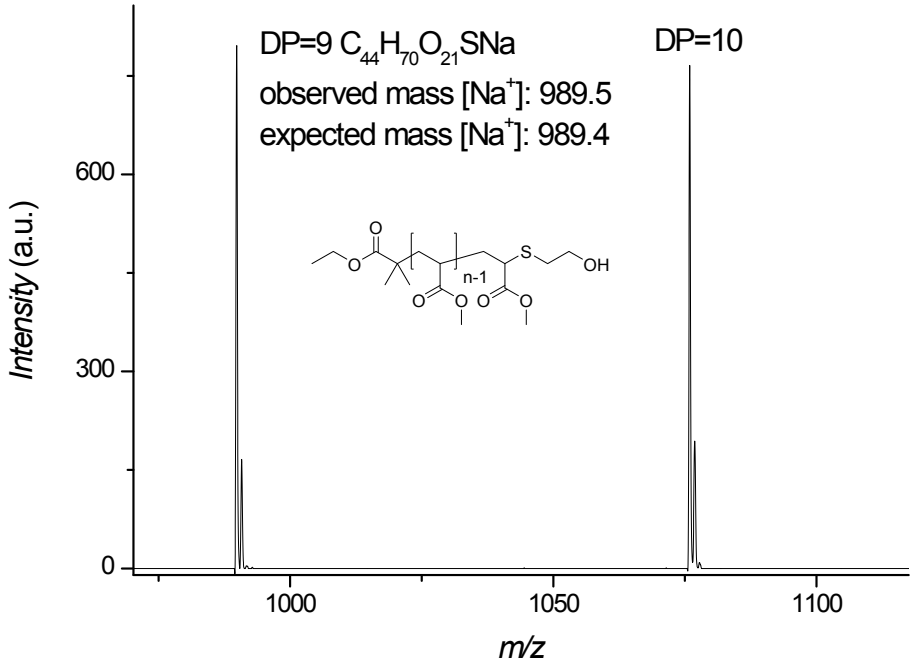


Figure S19b: Expanded MALDI-ToF-MS spectrum of hydroxyl-terminated poly(MA).

Characterization of di-hydroxyl-terminated poly(MA)

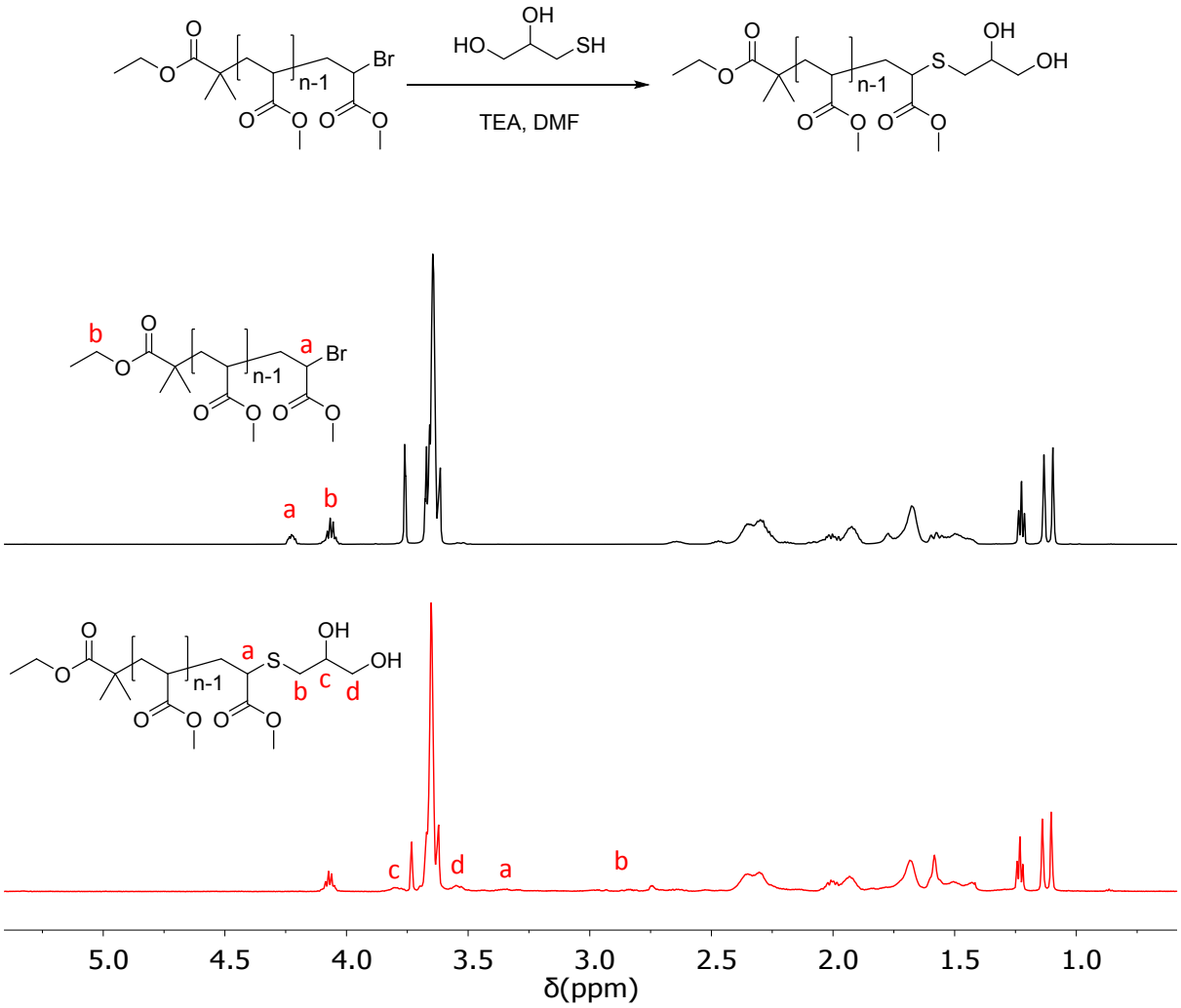


Figure S20: ^{1}H NMR spectra of the reaction from bromine-terminated poly(MA) (top) to di-hydroxyl-terminated poly(MA) (bottom).

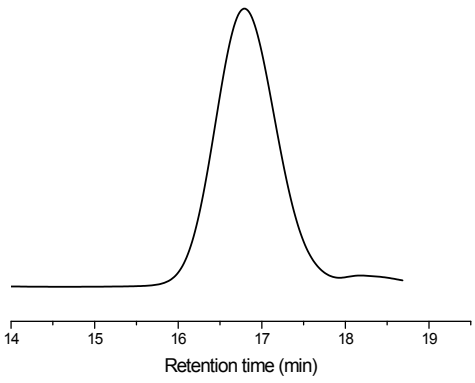


Figure S21: SEC trace of di-hydroxyl-terminated poly(MA), M_n = 1200 g mol^{-1}, $Đ$ = 1.10.

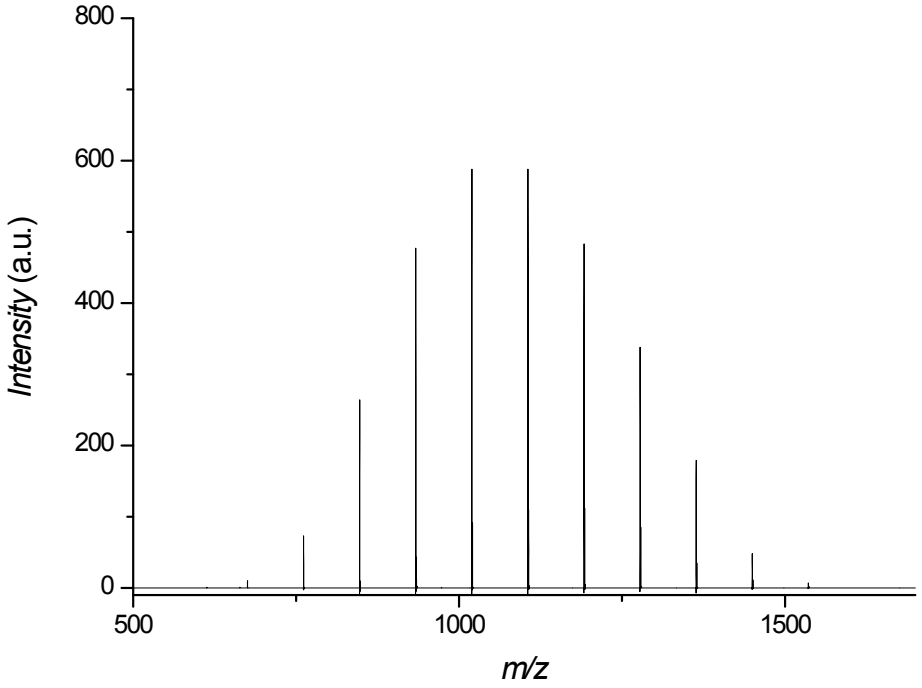


Figure S22a: MALDI-ToF-MS spectrum of di-hydroxyl-terminated poly(MA).

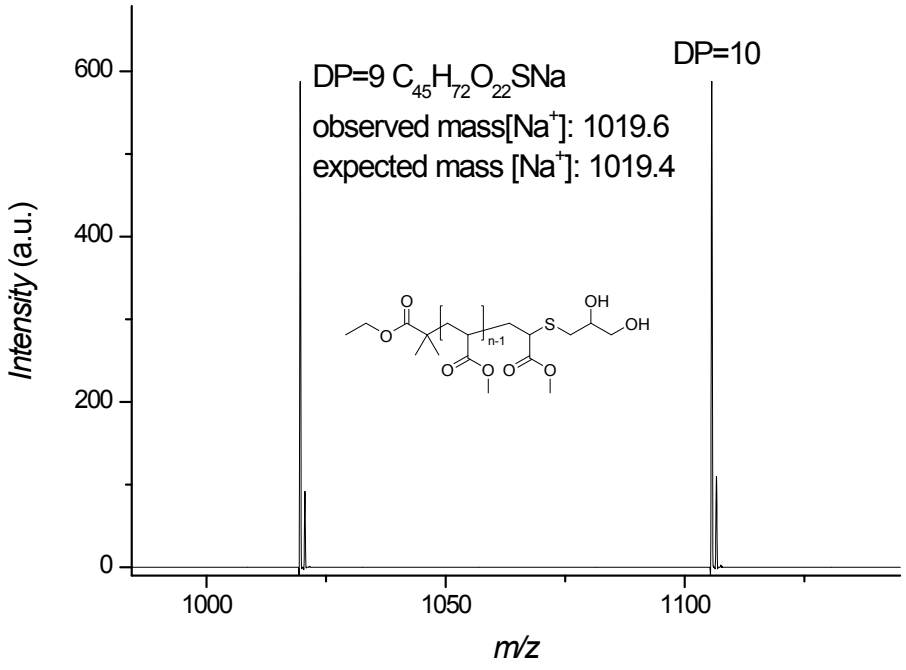


Figure S22b: Expanded MALDI-ToF-MS spectrum of di-hydroxyl-terminated poly(MA).

Characterization of carboxylic acid-terminated poly(MA)

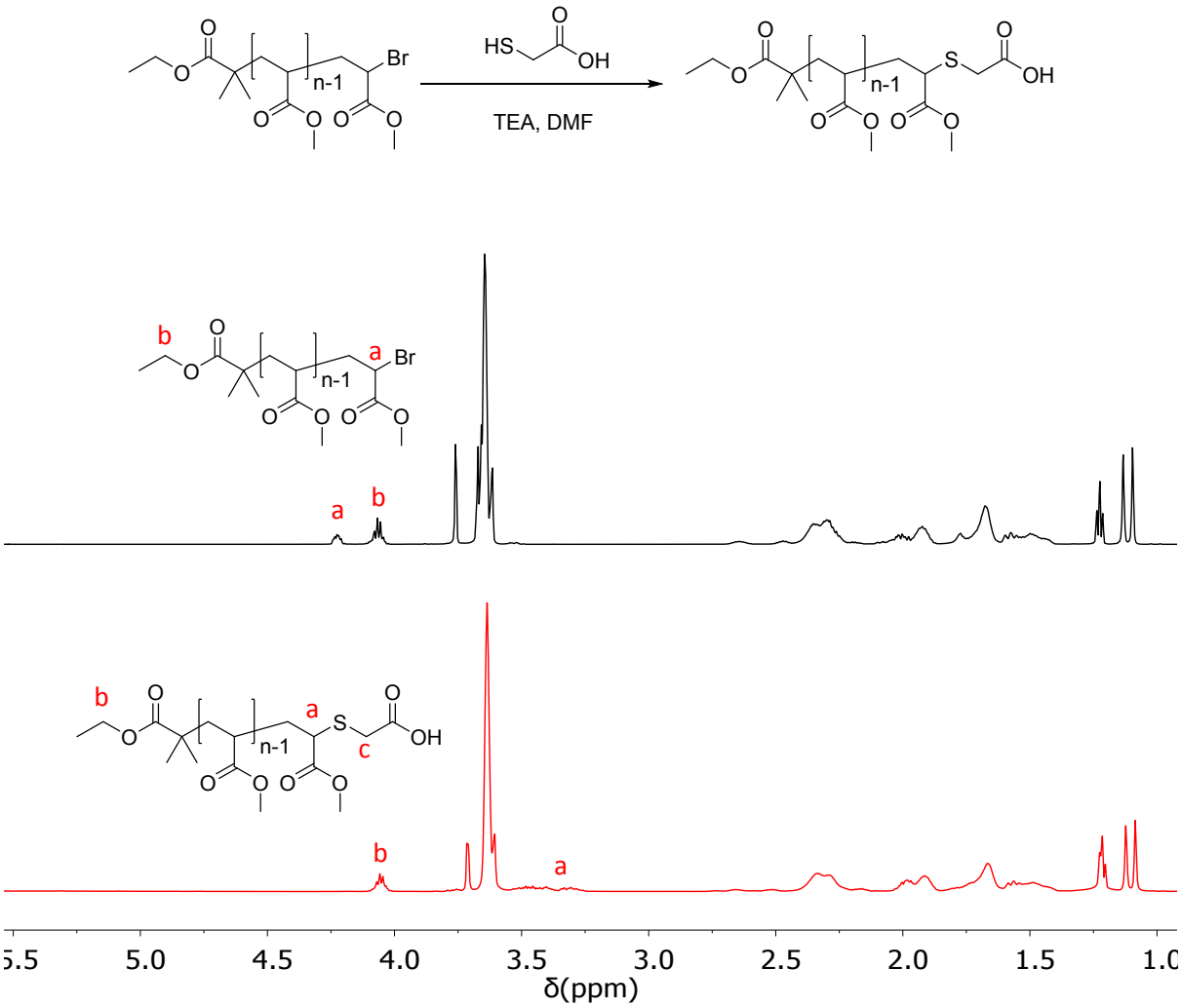


Figure S23: ^{1}H NMR spectra for the transformation of bromine-terminate poly(MA) (top) to carboxylic acid-terminated poly(MA) (bottom).

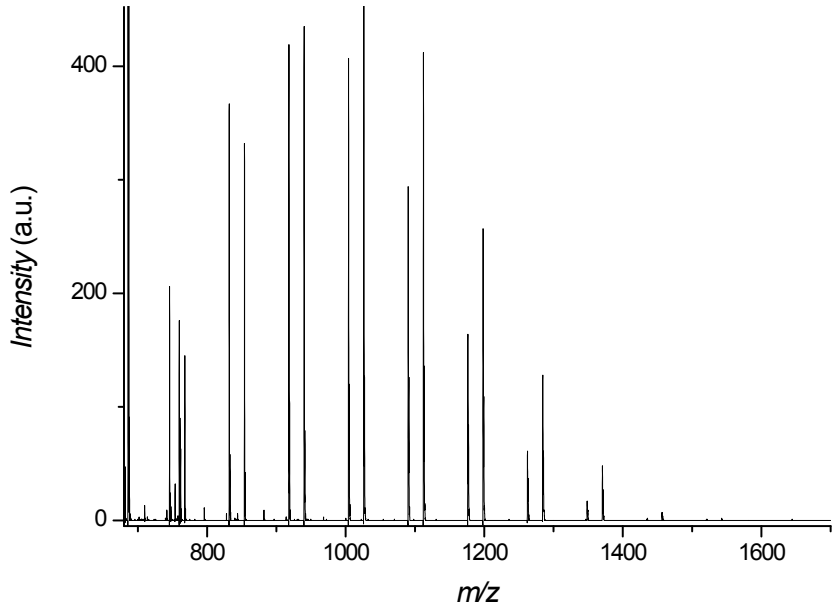


Figure S24a: MALDI-ToF-MS spectrum of carboxylic acid-terminated poly(MA).

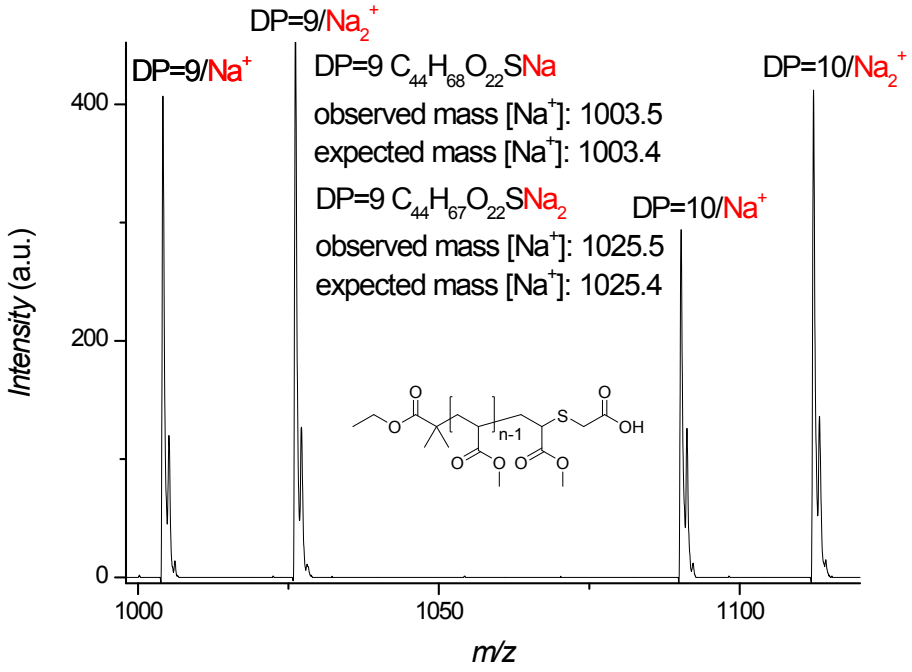


Figure S24b: Expanded MALDI-ToF-MS spectrum of carboxylic acid-terminated poly(MA).

Characterization of propane-terminated poly(MA)

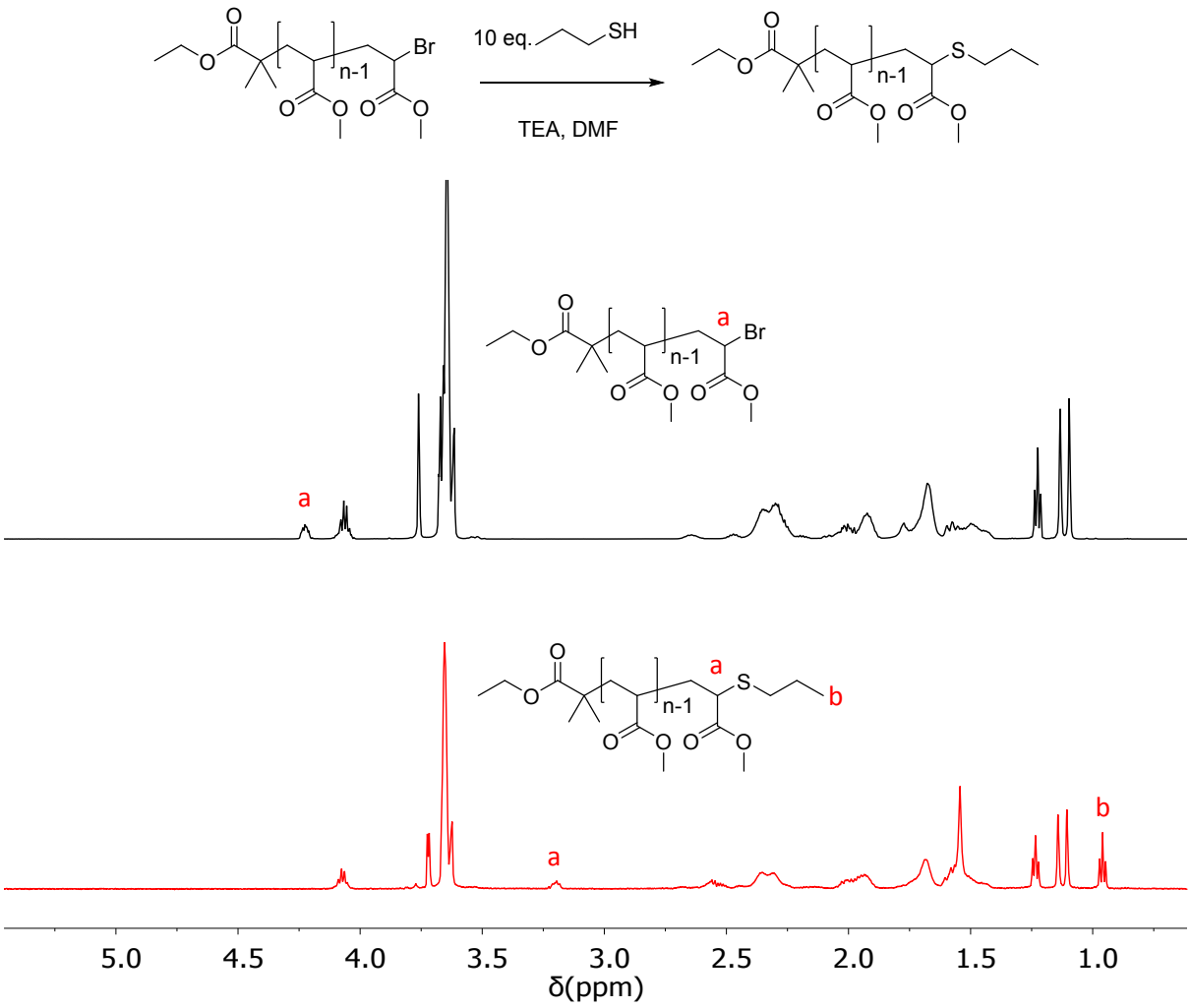


Figure S25: ^{1}H NMR spectra for the transformation of bromine-terminate poly(MA) (top) to propane-terminated poly(MA) (bottom).

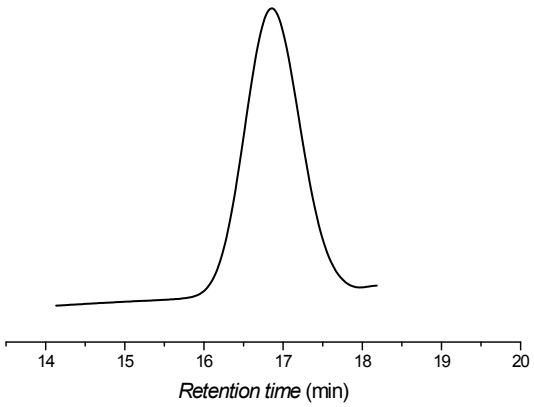


Figure S26: SEC trace of propane-terminated poly(MA), M_n = 1100 g mol^{-1}, $Đ$ = 1.14.

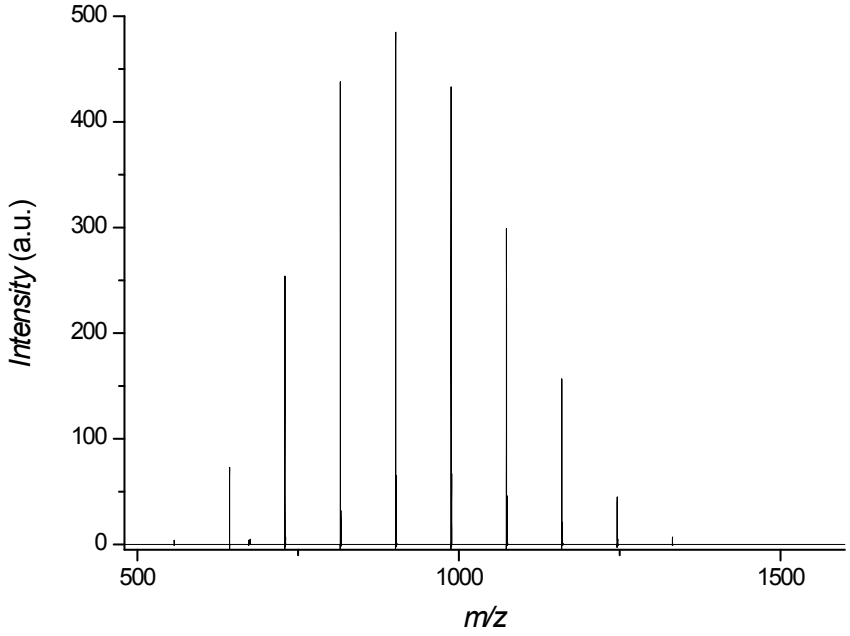


Figure S27a: MALDI-ToF-MS spectrum of propane-terminated poly(MA).

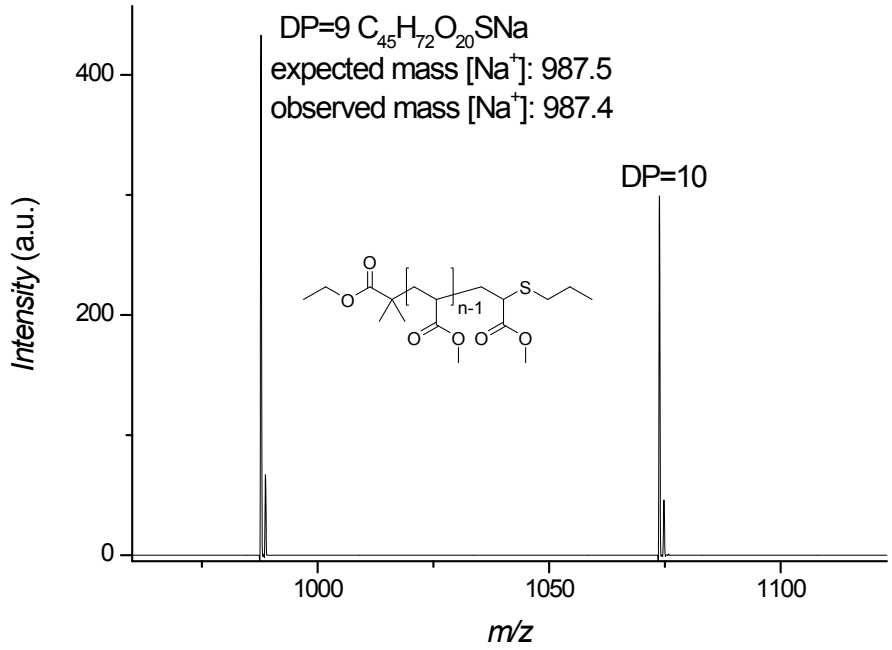


Figure S27b: Expanded MALDI-ToF-MS spectrum of propane-terminted poly(MA).

Characterization of azide-terminated poly(MA)

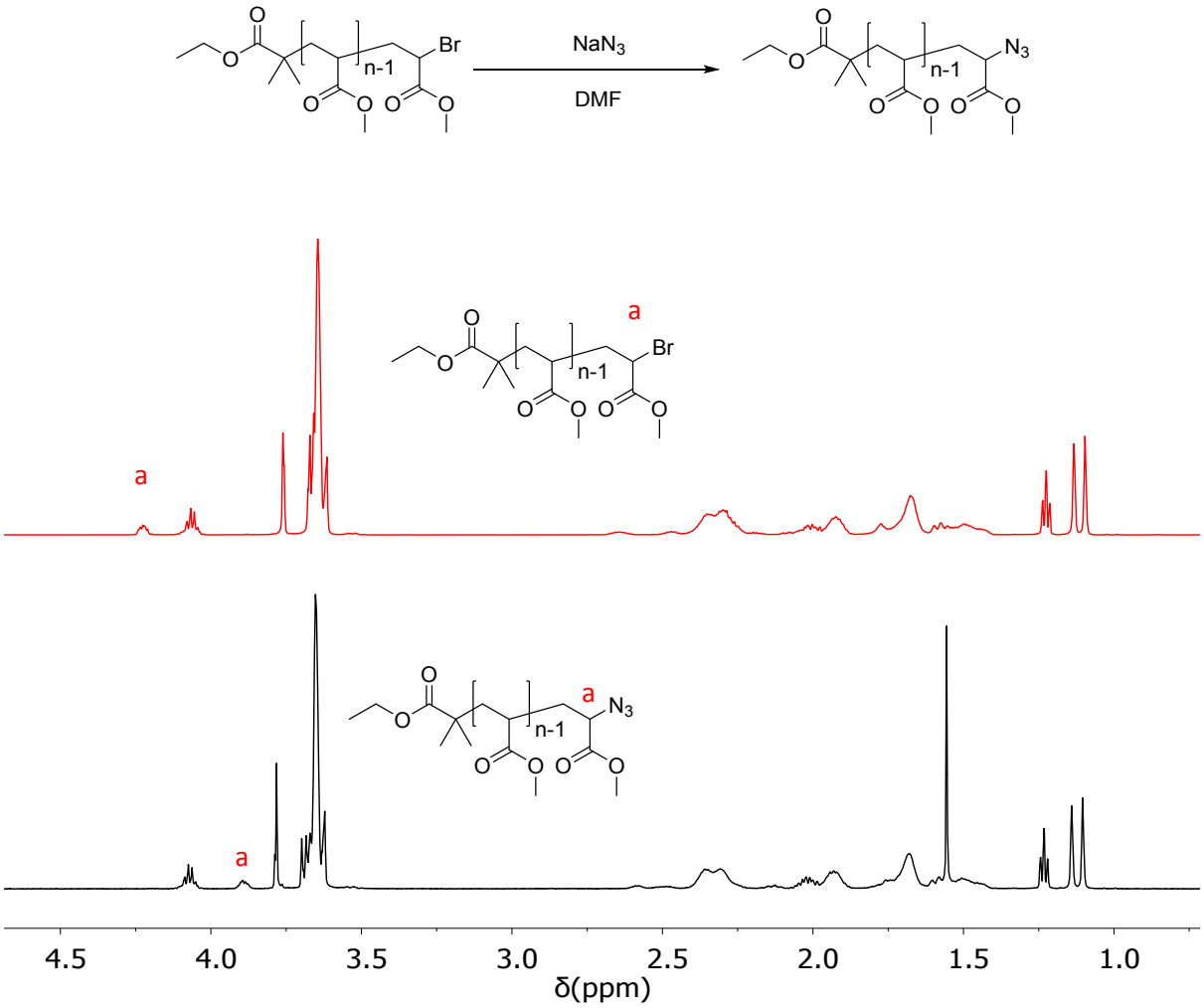


Figure S28: ^{1}H NMR spectra for the transformation of bromine-terminate poly(MA) (top) to azide-terminated poly(MA) (bottom).

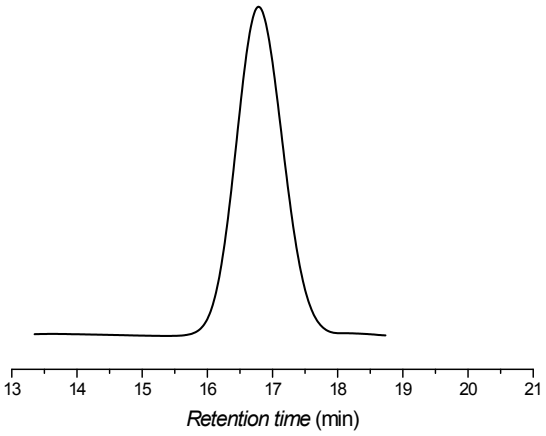


Figure S29: SEC trace of azide-terminated poly(MA), M_n = 1000 g mol^{-1}, $Đ$ = 1.11.

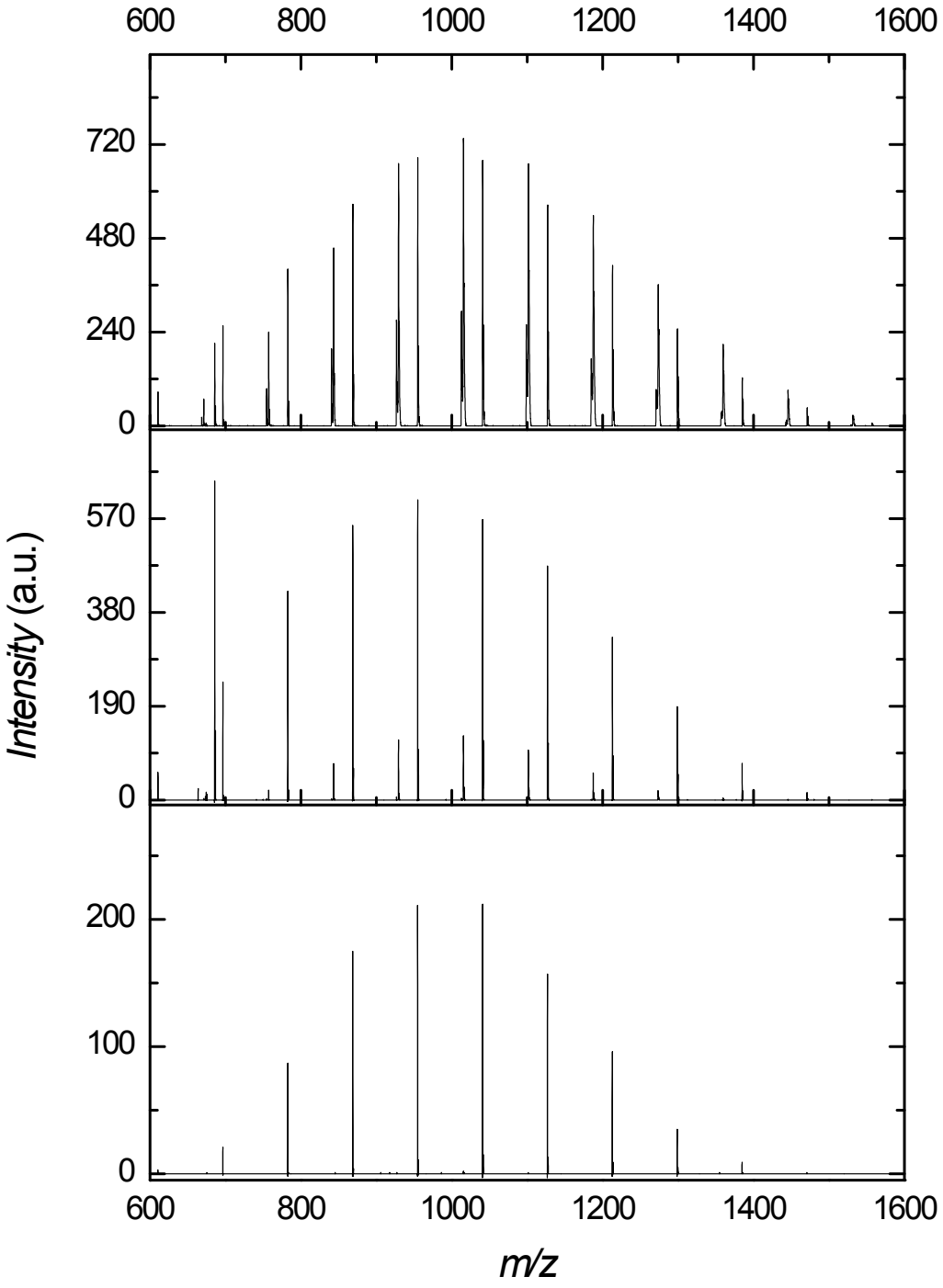


Figure S30a: MALDI-ToF-MS spectra of azide-terminated poly(MA) utilizing different laser power (with increased laser power, from bottom to top, the fragmentation increases considerably).

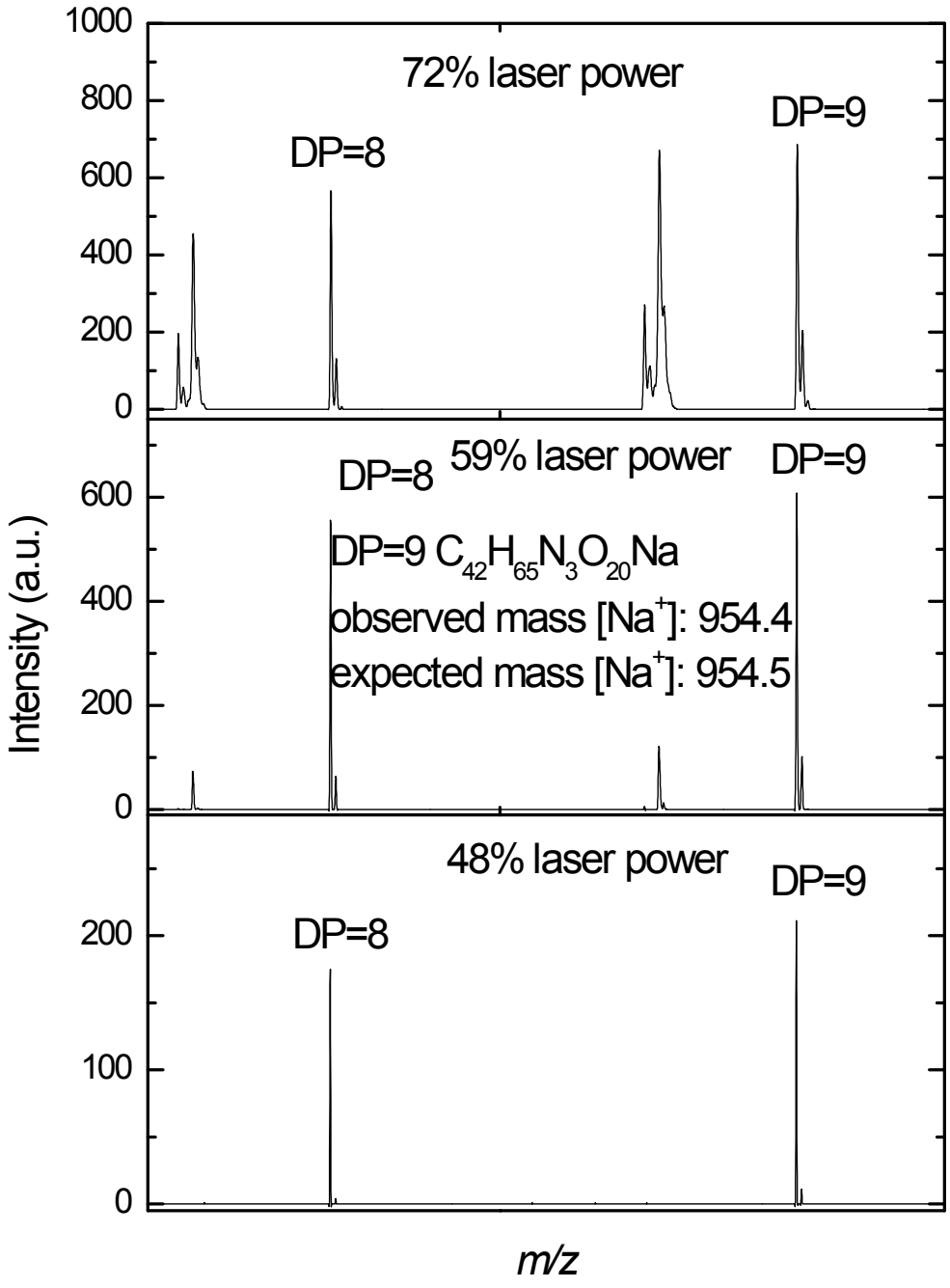


Figure S30b: Expanded MALDI-ToF-MS spectra of azide-terminated poly(MA) utilizing different laser power (with increased laser power, from bottom to top, the fragmentation increases considerably).

Characterization of triazole-terminated poly(MA)

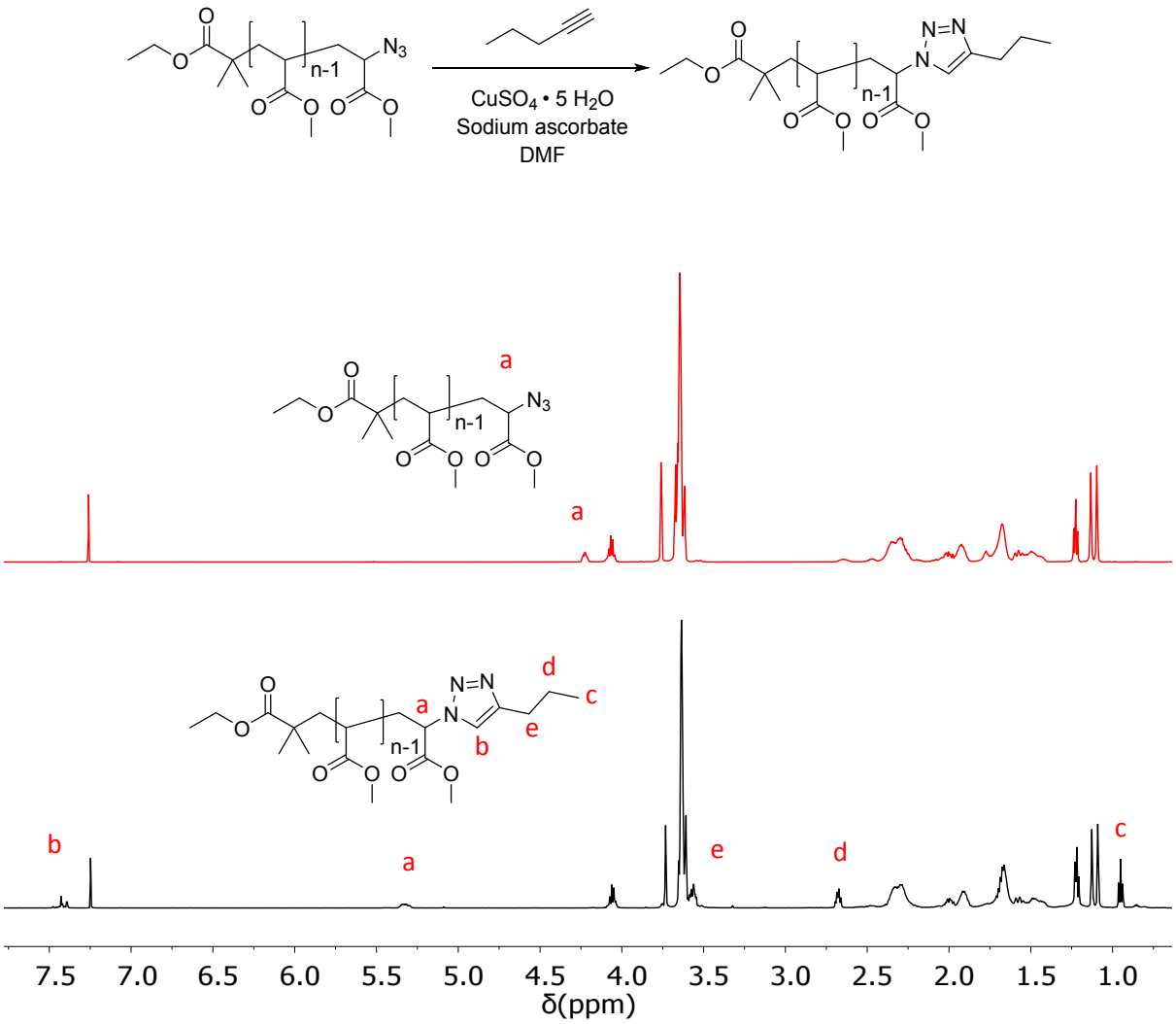


Figure S31: ^{1}H NMR spectra for the transformation of azide-terminate poly(MA) (top) to triazole-terminated poly(MA) (bottom).

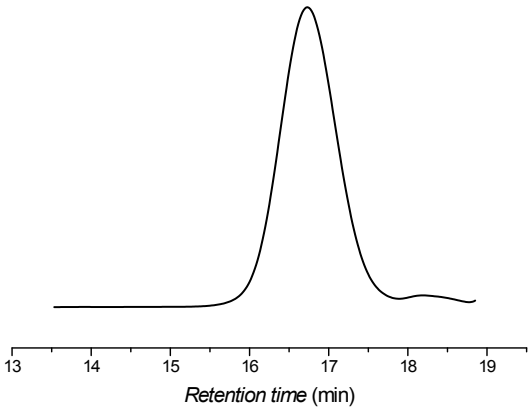


Figure S32: SEC trace of triazole-terminated poly(MA), M_n = 1200 g mol^{-1}, $Đ$ = 1.11.

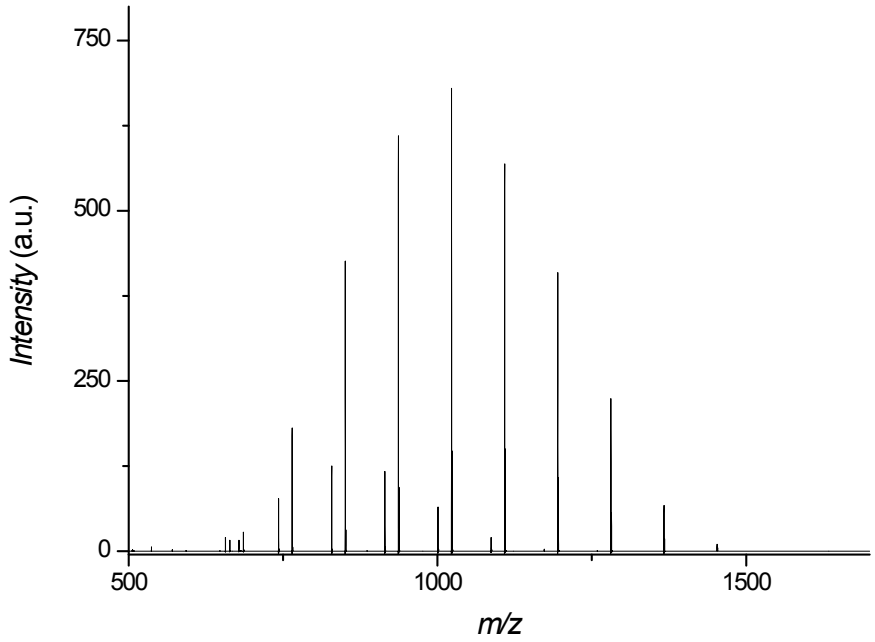


Figure S33a: MALDI-ToF-MS spectrum of triazole-terminated poly(MA).

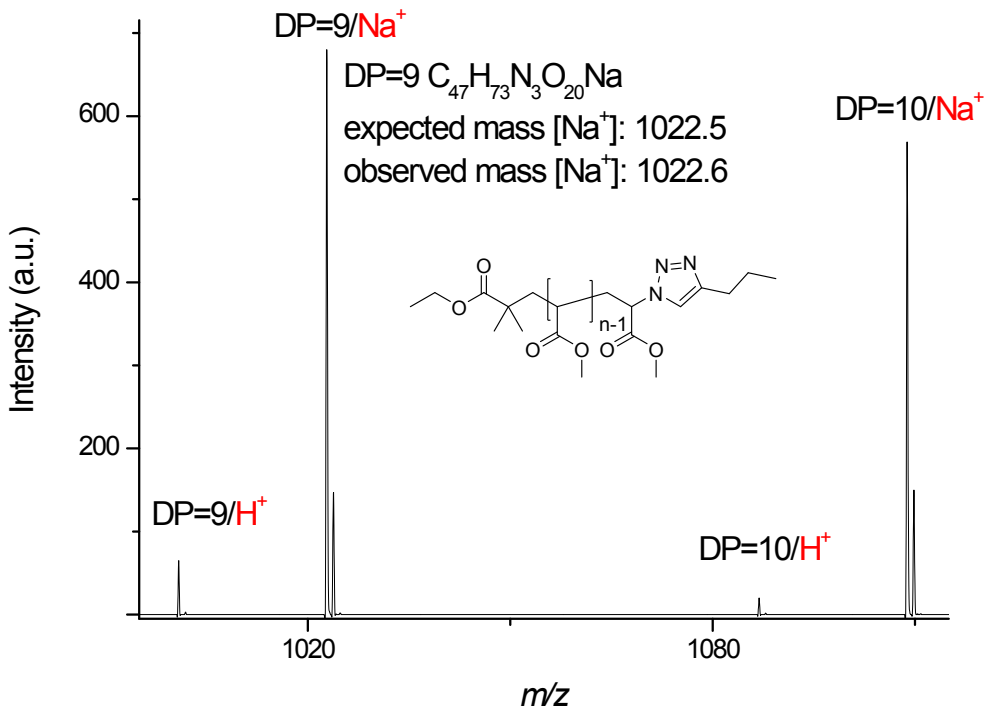


Figure S33b: Expanded MALDI-ToF-MS spectrum of triazole-terminated poly(MA).

Characterization of phosphonium-terminated poly(MA)

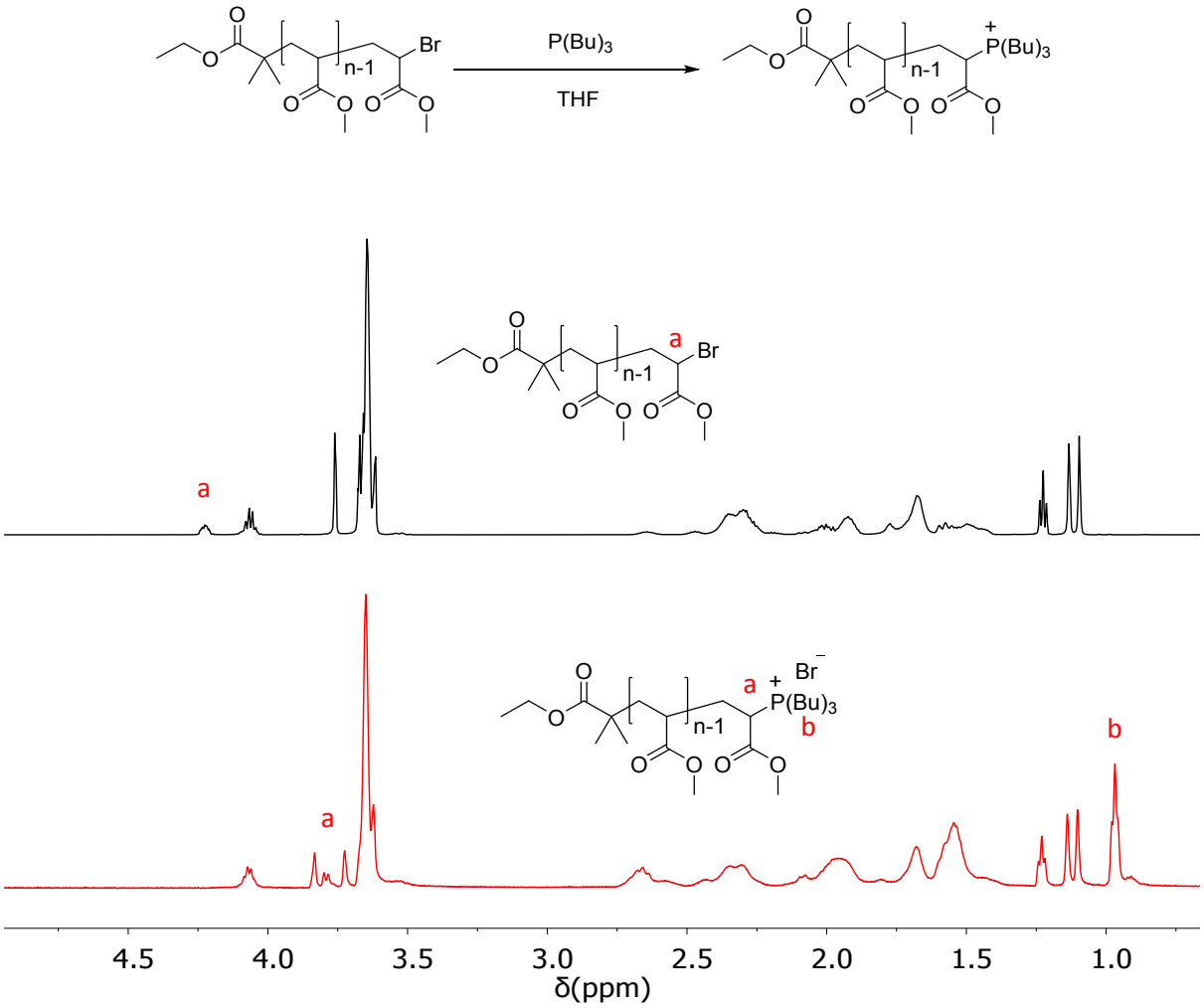


Figure S34: ^{1}H NMR spectra for the transformation of bromine-terminate poly(MA) (top) to phosphonium-terminated poly(MA) (bottom).

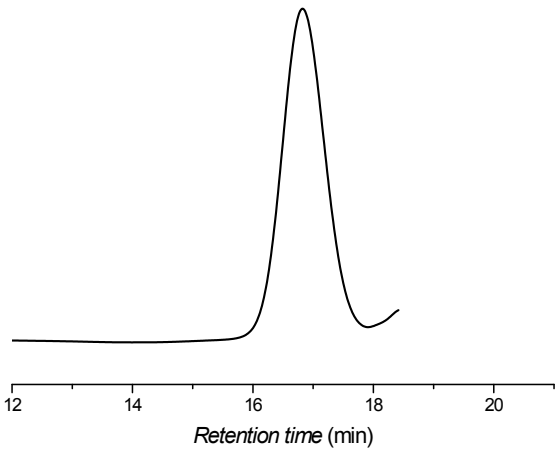


Figure S35: SEC trace of phosphonium-terminated poly(MA), M_n = 1100 g mol^{-1}, $Đ$ = 1.12.

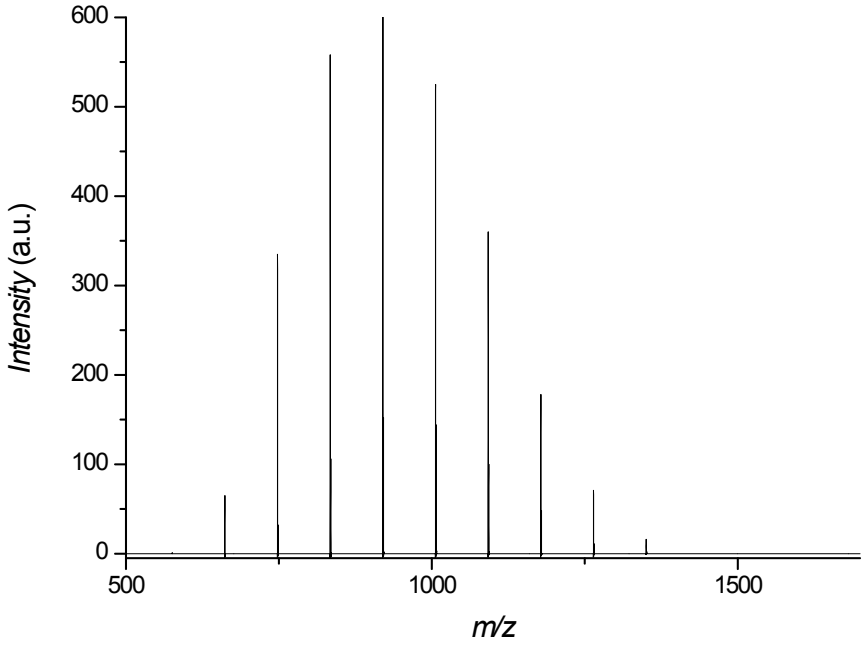


Figure S36a: MALDI-ToF-MS spectrum of phosphonium-terminated poly(MA).

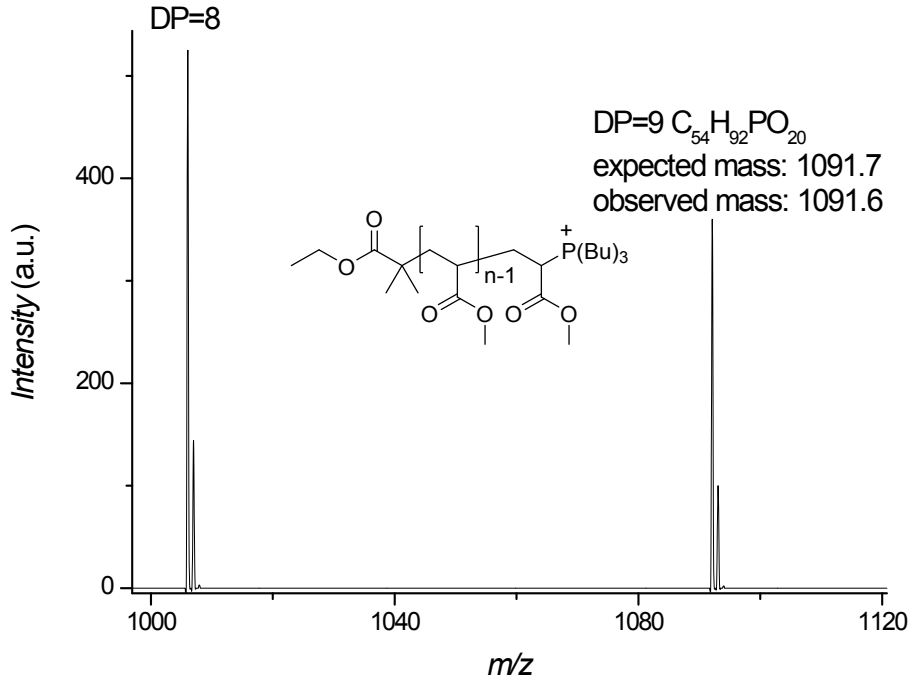


Figure S36b: Expanded MALDI-ToF-MS spectrum of phosphonium-terminated poly(MA).

Characterization of poly(MA) of higher MW and its modifications

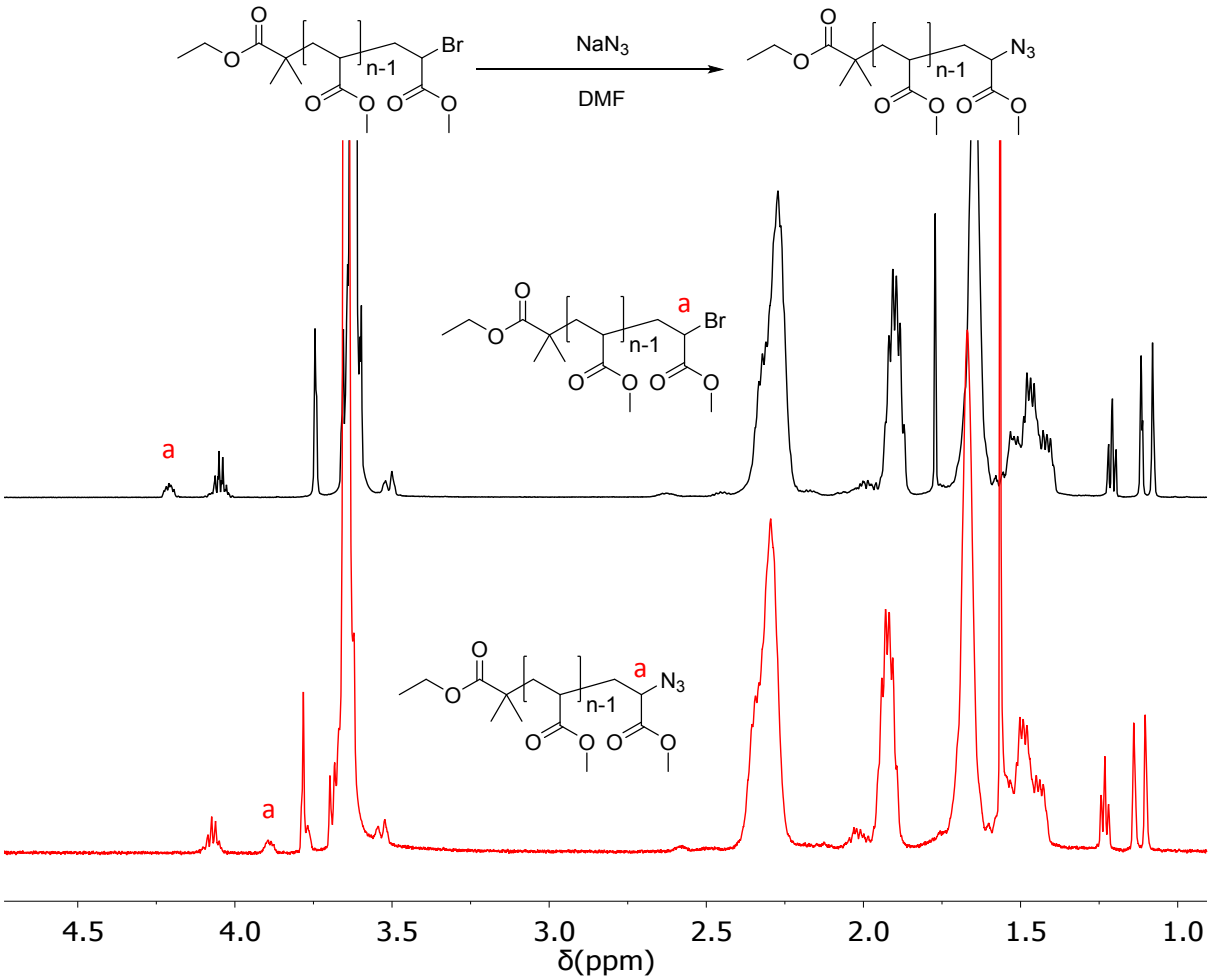


Figure S37: ^{1}H NMR spectra of the transformation of higher MW bromine-terminated poly(MA) (top) to azide-terminated poly(MA) (bottom).

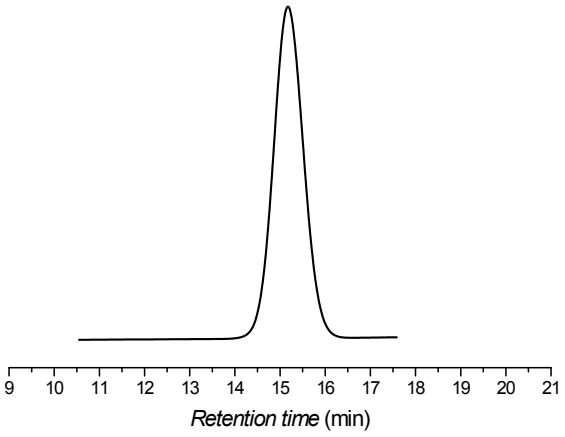


Figure S38: SEC trace of higher MW bromine-terminated poly(MA), M_n = 6400 g mol^{-1}, $Đ$ = 1.09.

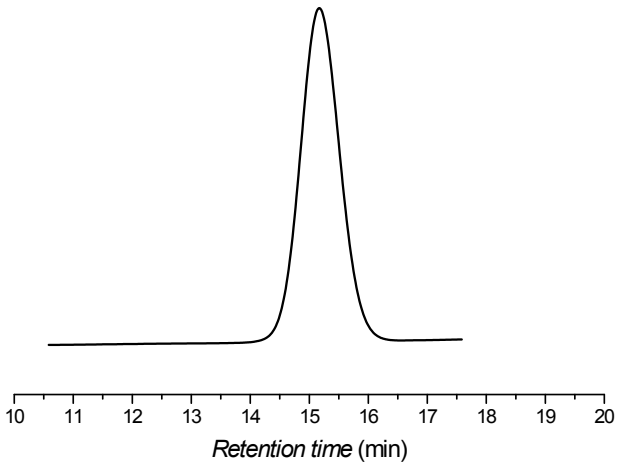
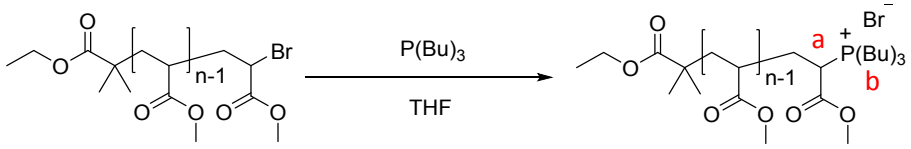


Figure S39: SEC trace of higher MW azide-terminated poly(MA), M_n = 6400 g mol^{-1}, $Đ$ = 1.09.



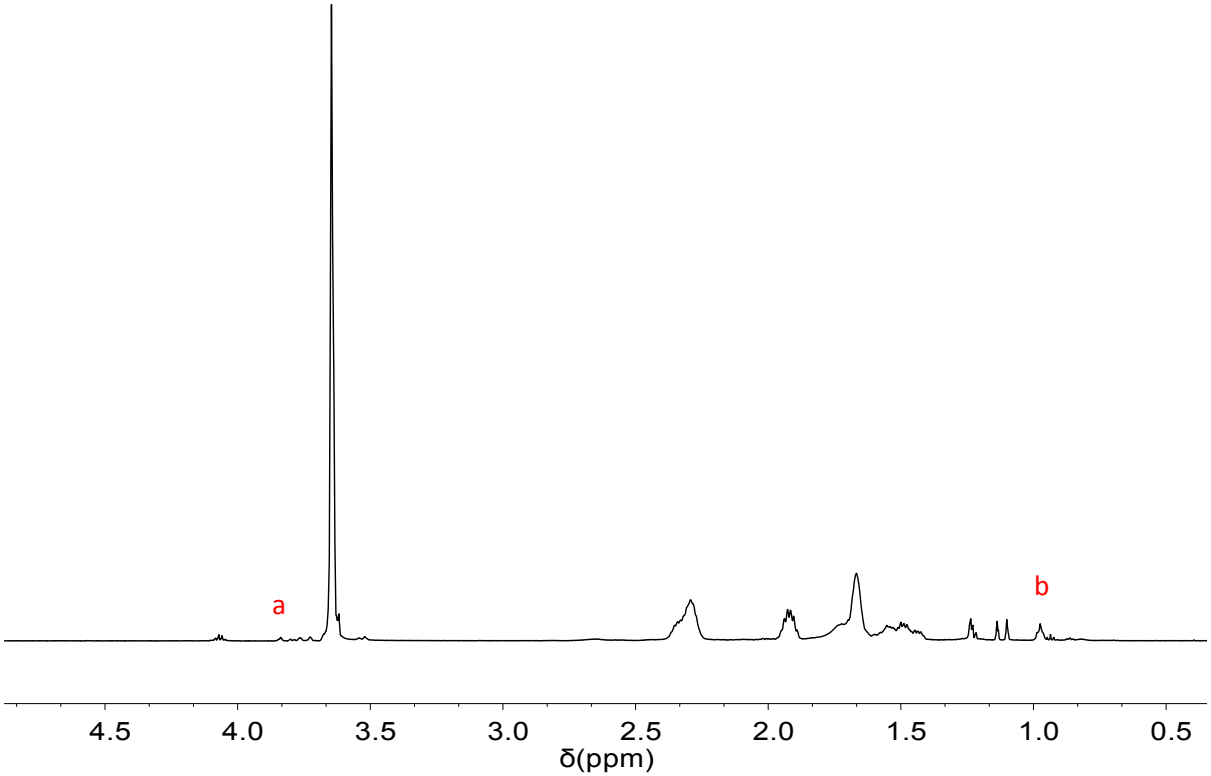
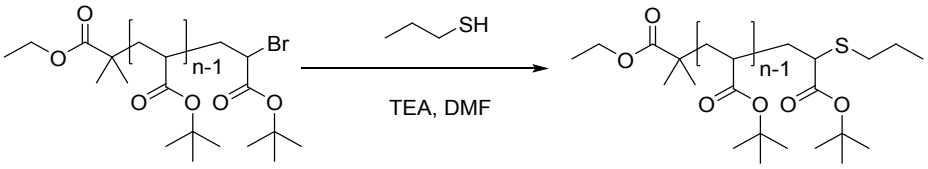


Figure S40: ^{1}H NMR spectrum of the higher MW phosphonium-terminated poly(MA).

Characterization of bromine-terminated poly(tBA) and propane-terminated poly(tBA)



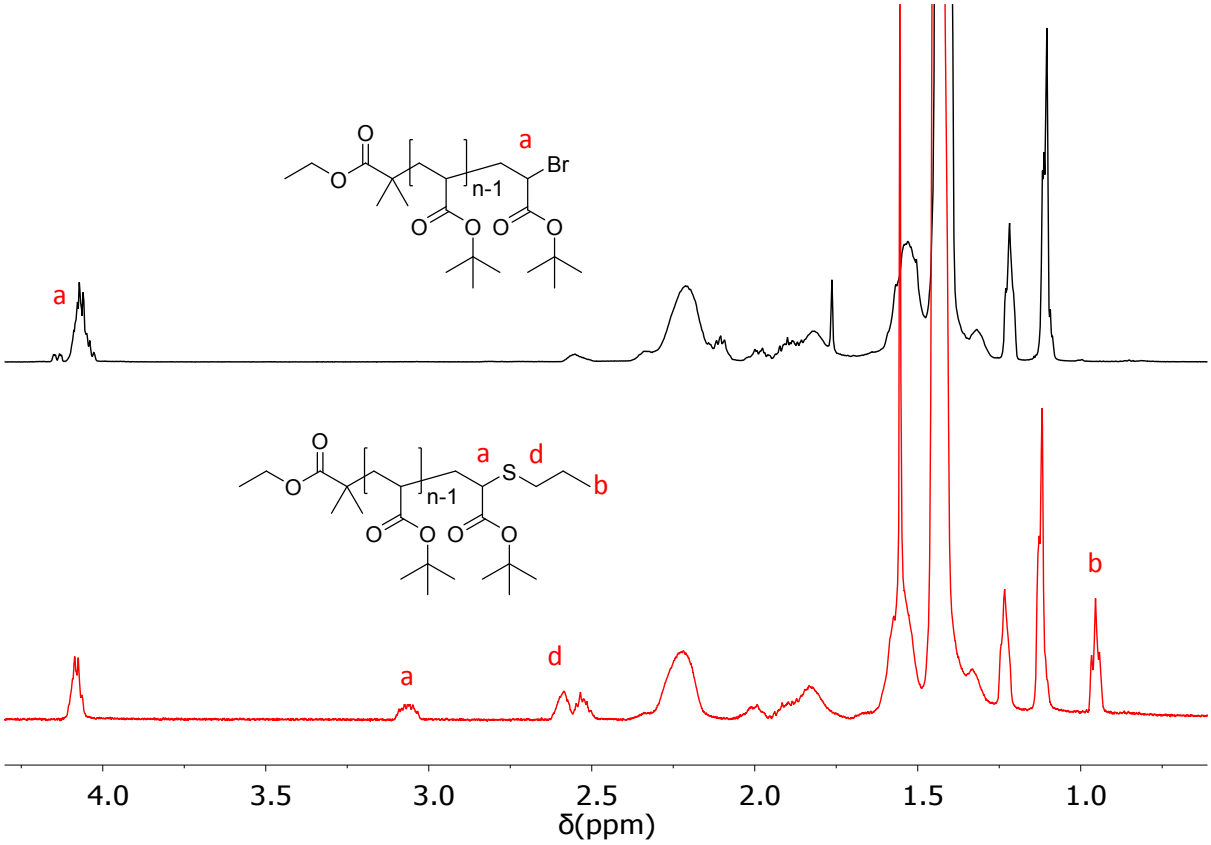


Figure S41: ^{1}H NMR spectra of the transformation of bromine-terminated poly(tBA) (top) to propane-terminated poly(tBA) (bottom).

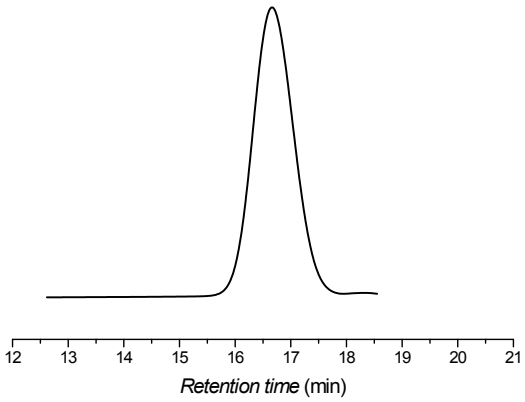


Figure S42: SEC trace of bromine-terminated poly(tBA), M_n = 1300 g mol^{-1}, $Đ$ = 1.15.

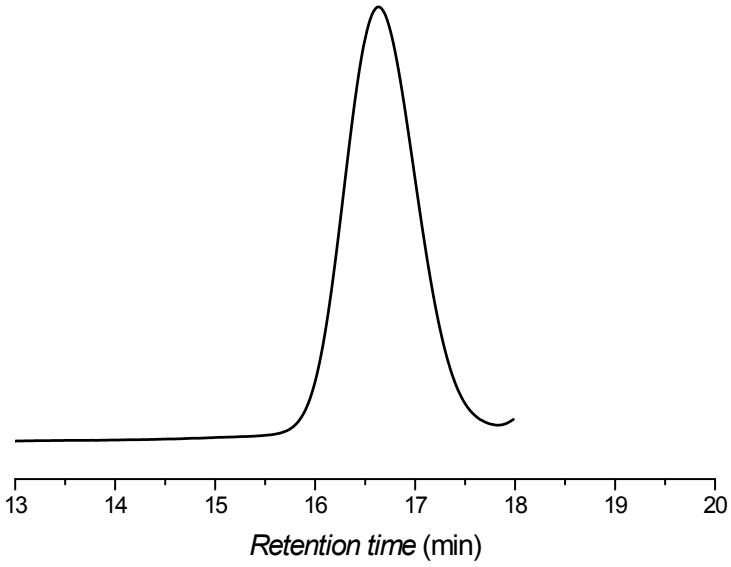


Figure S43: SEC of propane-terminated poly(tBA), M_n = 1400 g mol^{-1}, $Đ$ = 1.12.

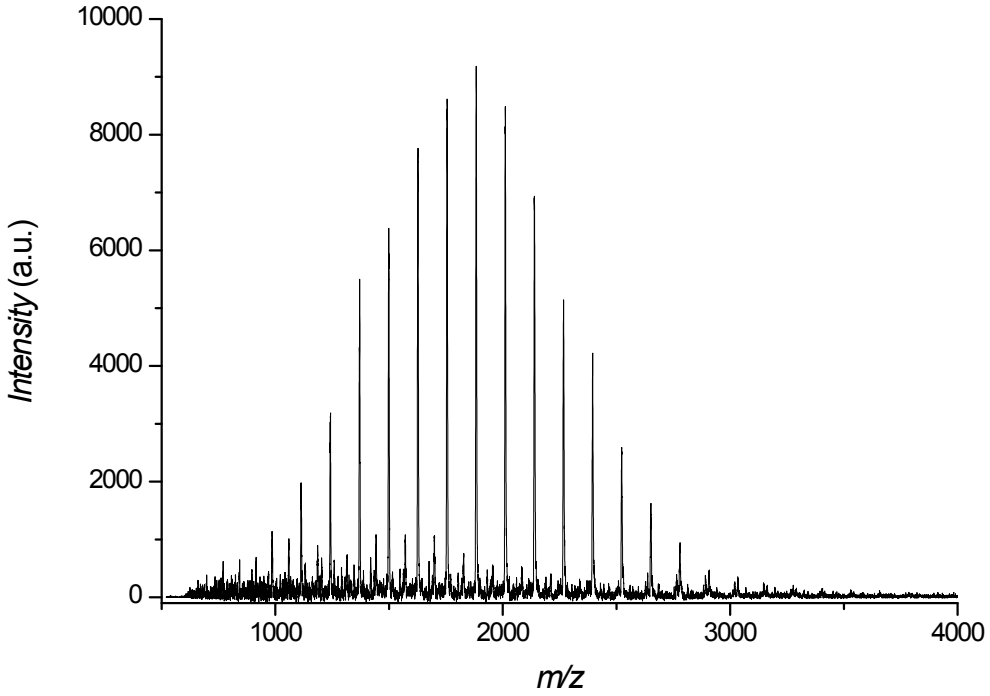


Figure S44a: MALDI-ToF-MS spectrum of bromine-terminated poly(tBA).

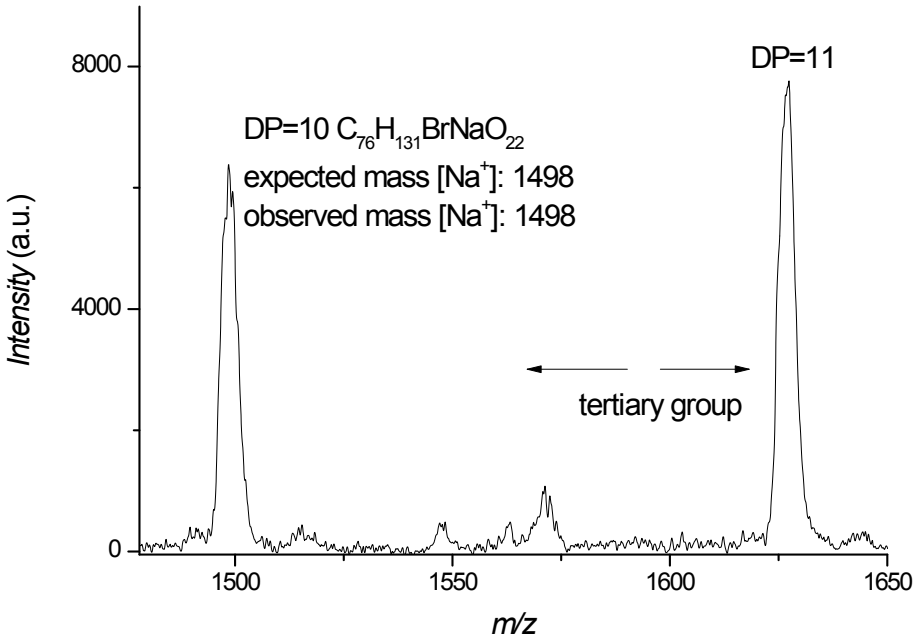


Figure S44b: Expanded MALDI-ToF-MS spectrum of bromine-terminated poly(tBA).

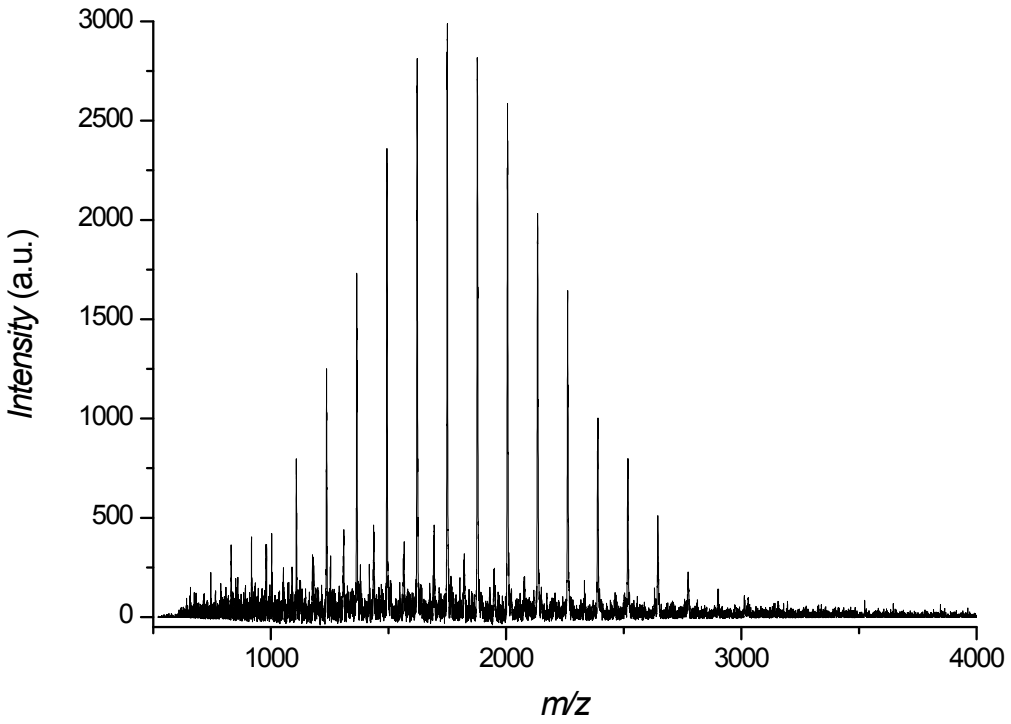


Figure S45a: MALDI-ToF-MS spectrum of propane-terminated poly(tBA).

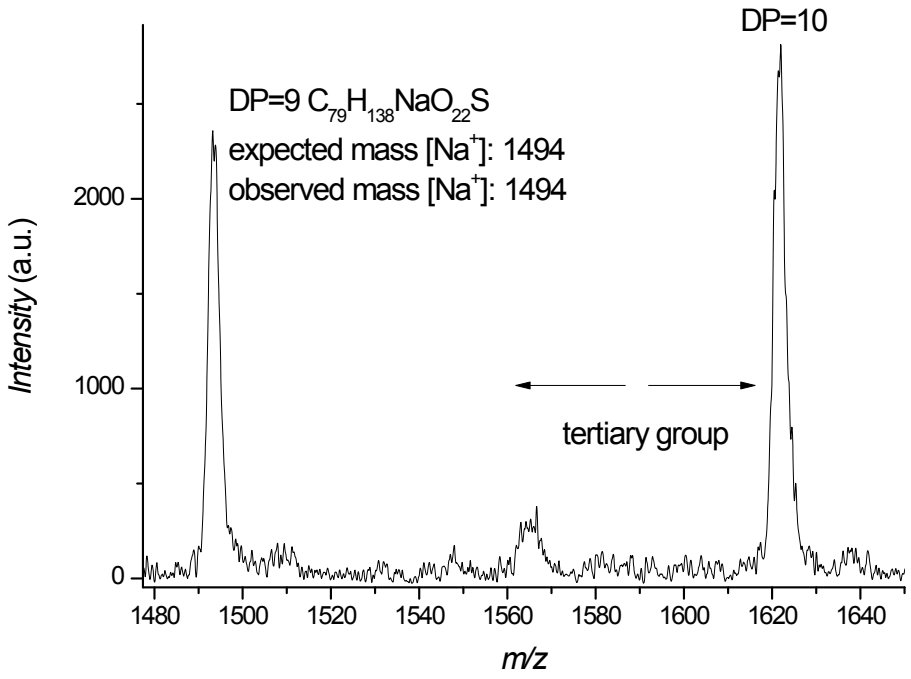


Figure S45b: Expanded MALDI-ToF-MS spectrum of propane-terminated poly(tBA).