Electronic Supplementary Material (ESI) for Polymer Chemistry.

SUPPORTING INFORMATION

Organophosphonic acids as viable linkers for the covalent attachment of polyelectrolyte brushes on silica and mica surfaces

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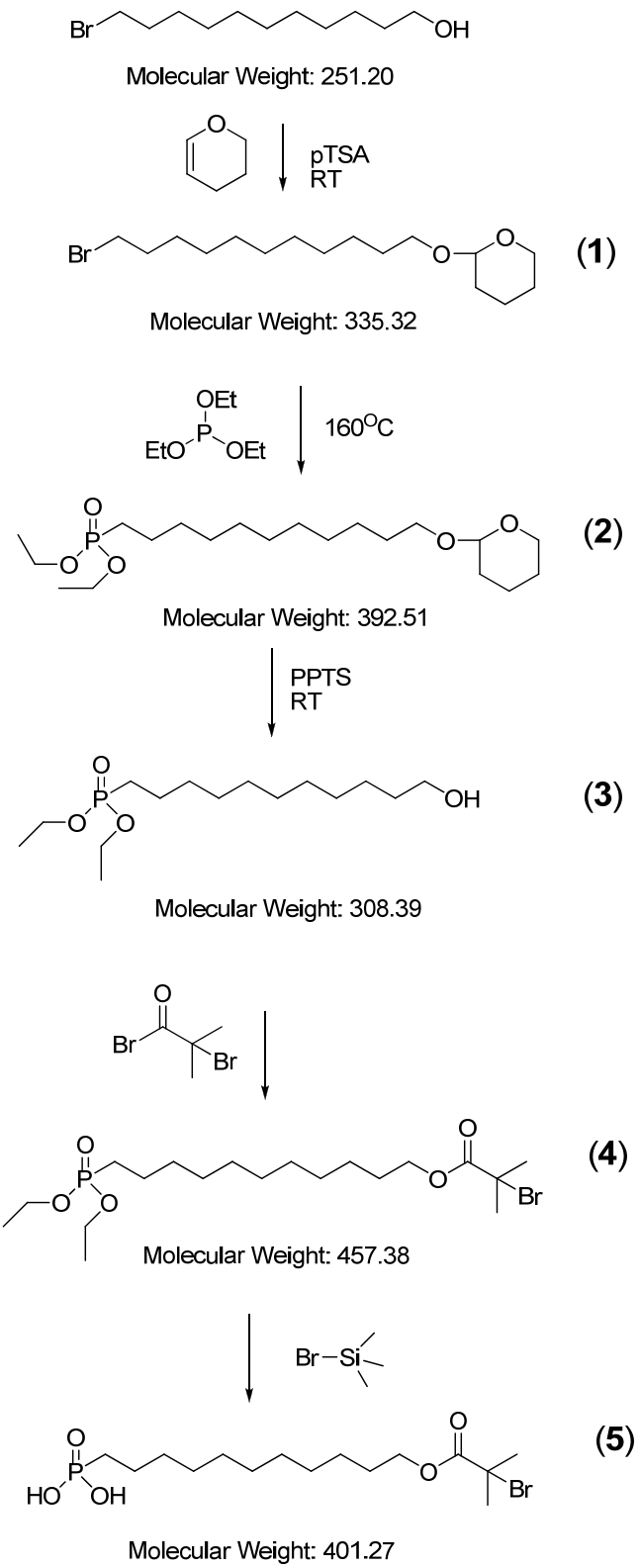


Figure S1. Synthetic scheme for the preparation of phosphonic initiator (**5**).

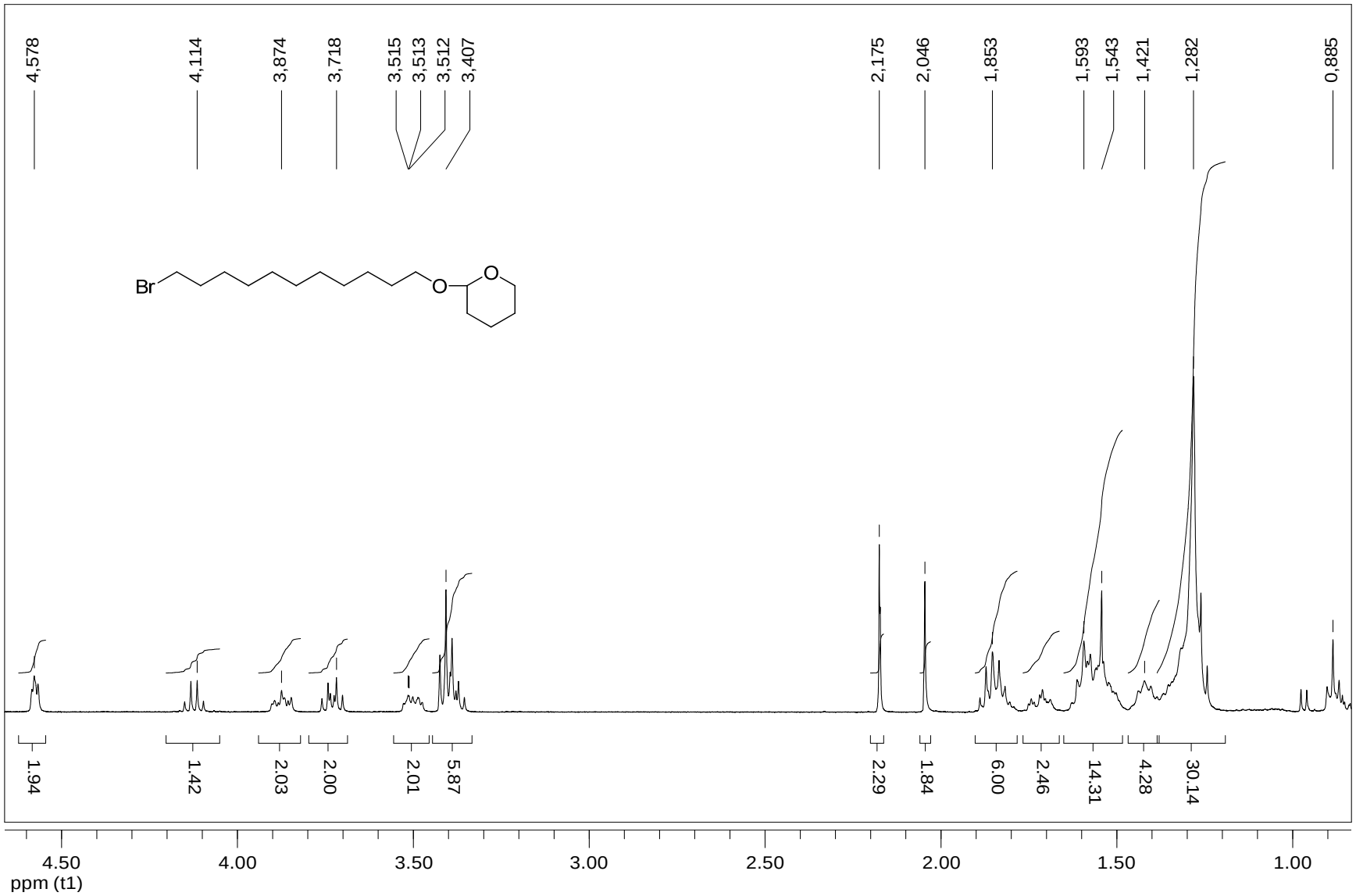


Figure S2. ^{1}H NMR spectrum of **1** in chloroform.

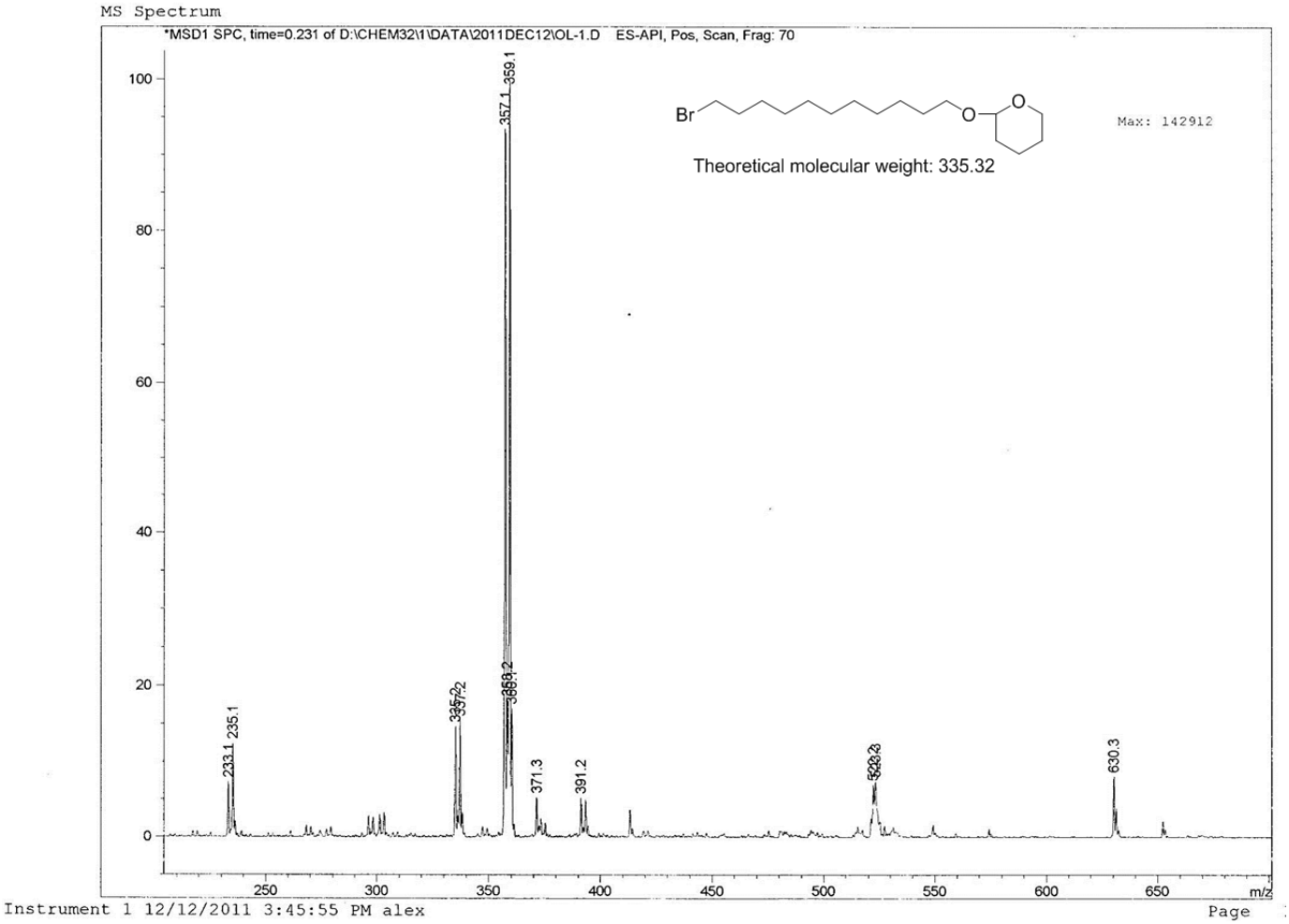


Figure S3. Mass spectrum of **1**.

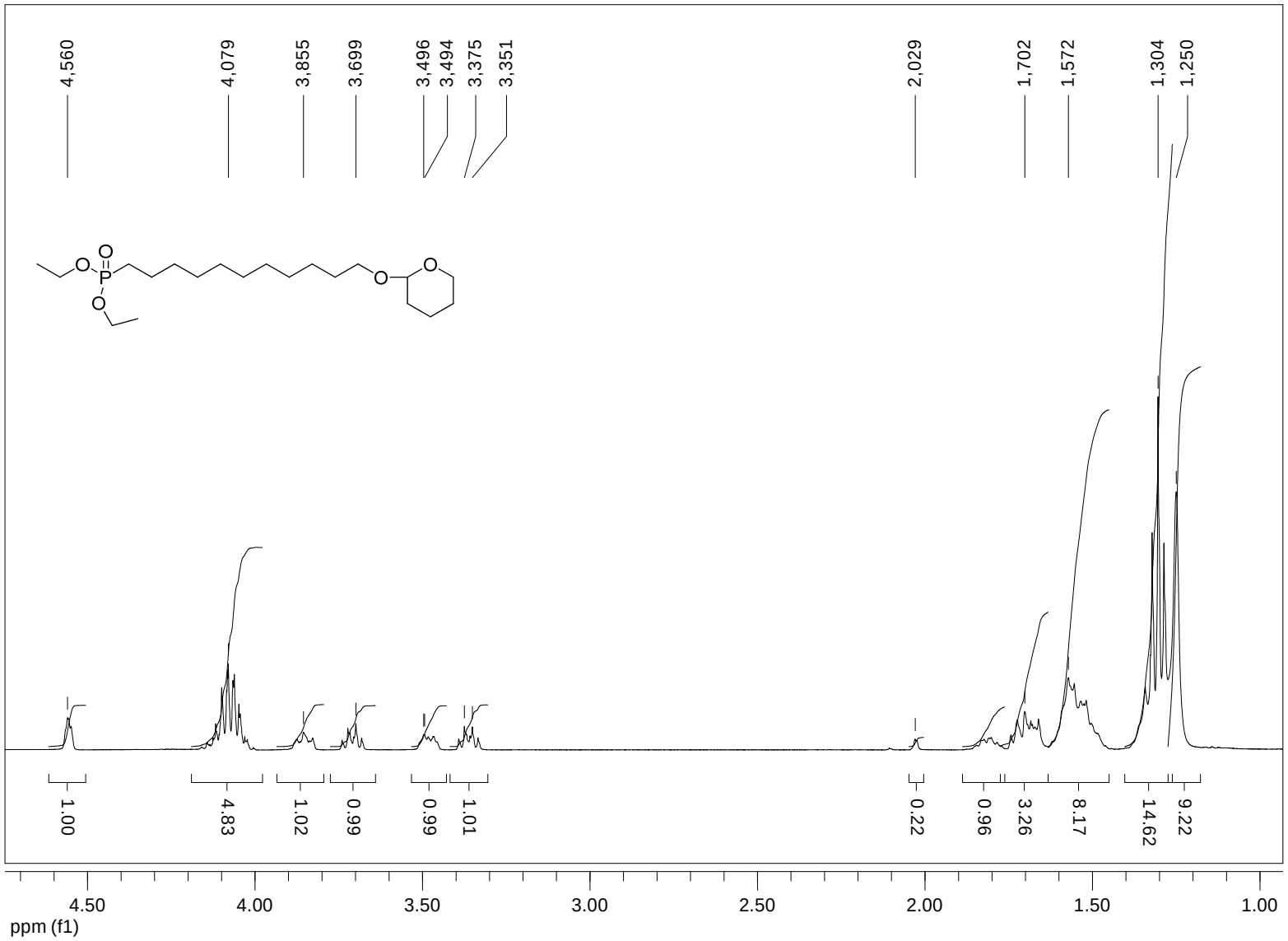


Figure S4. ^{1}H NMR spectrum of **2** in chloroform.

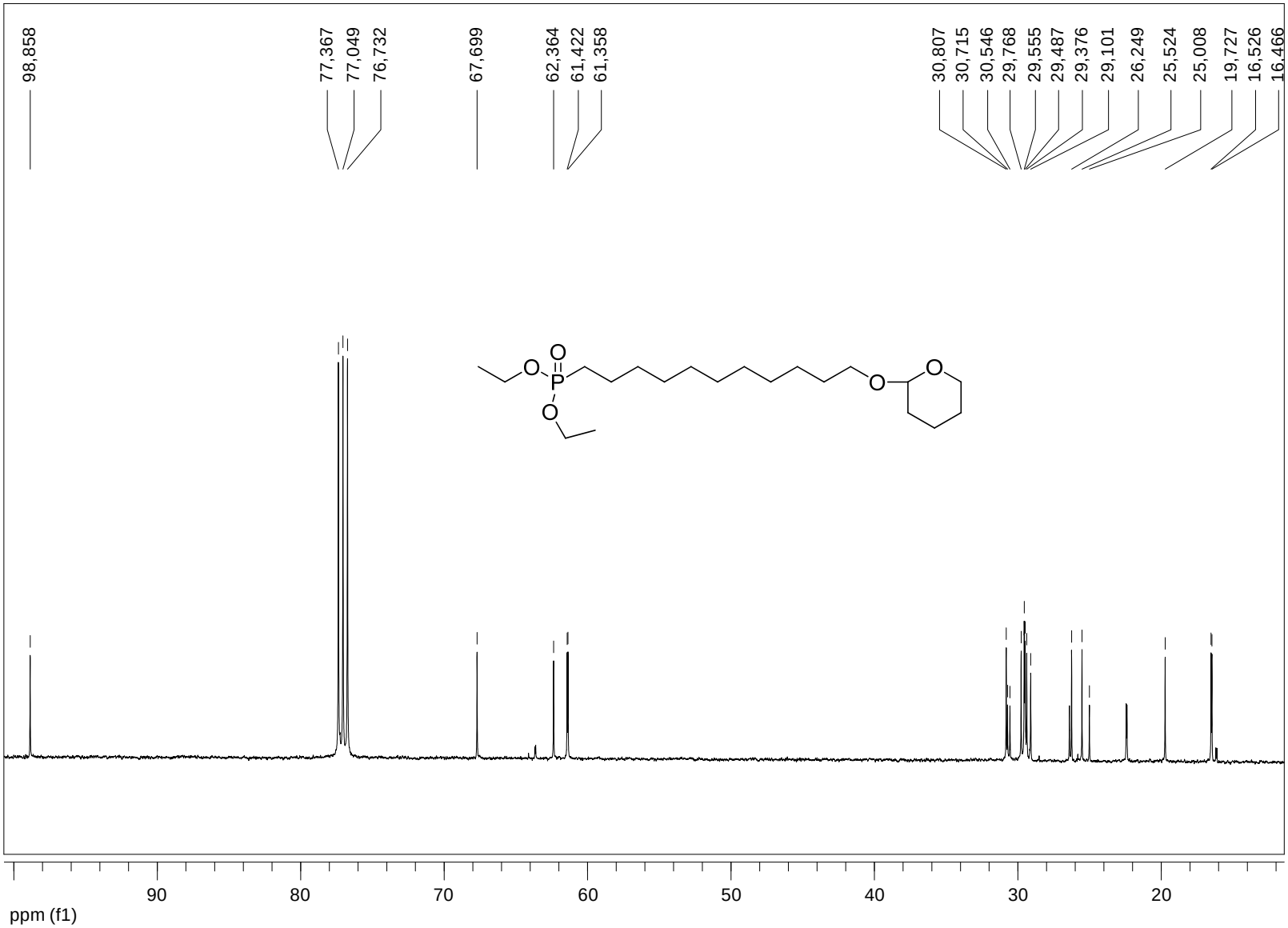


Figure S5. ^{13}C NMR spectrum of **2** in chloroform.

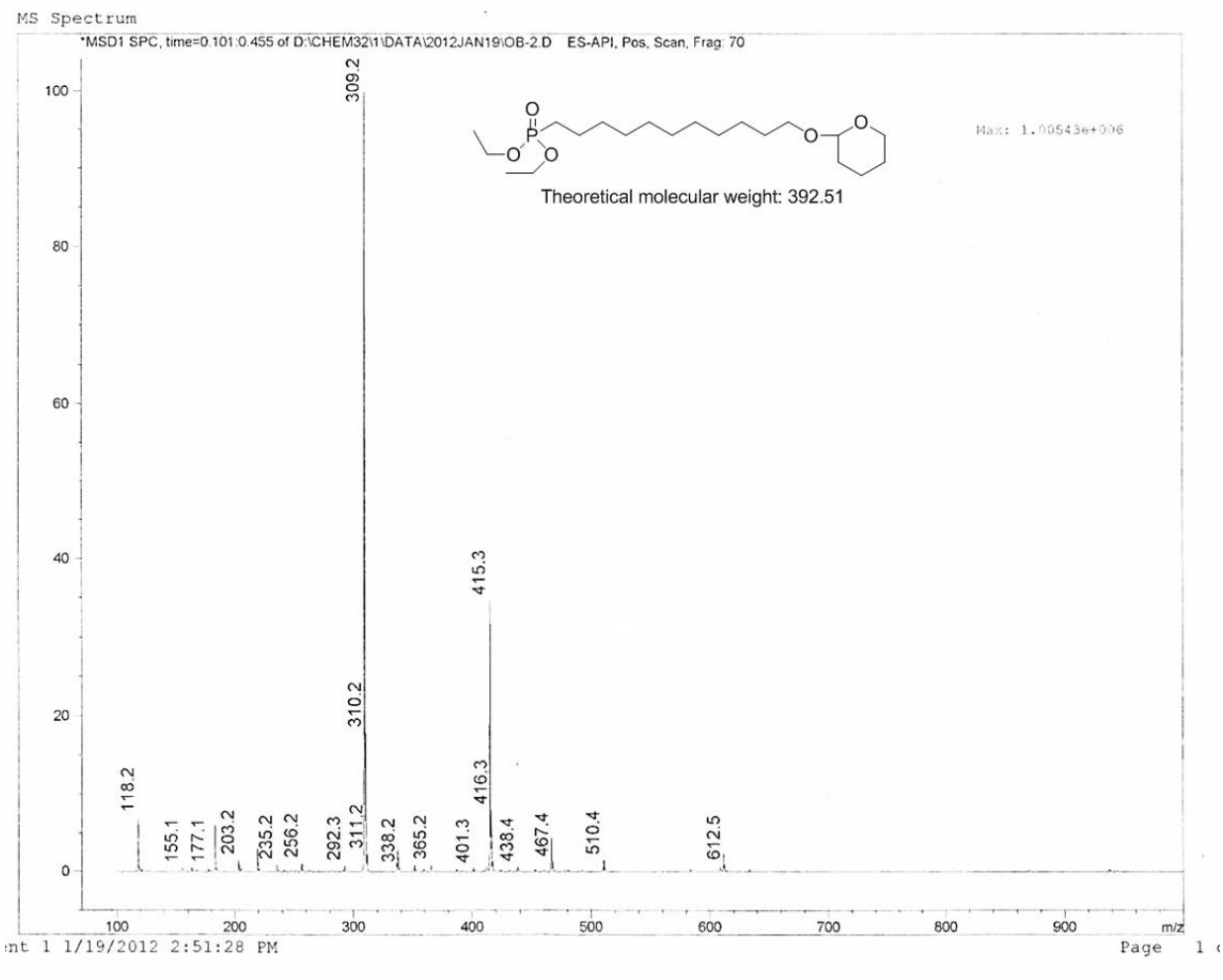


Figure S6. Mass spectrum of **2**.

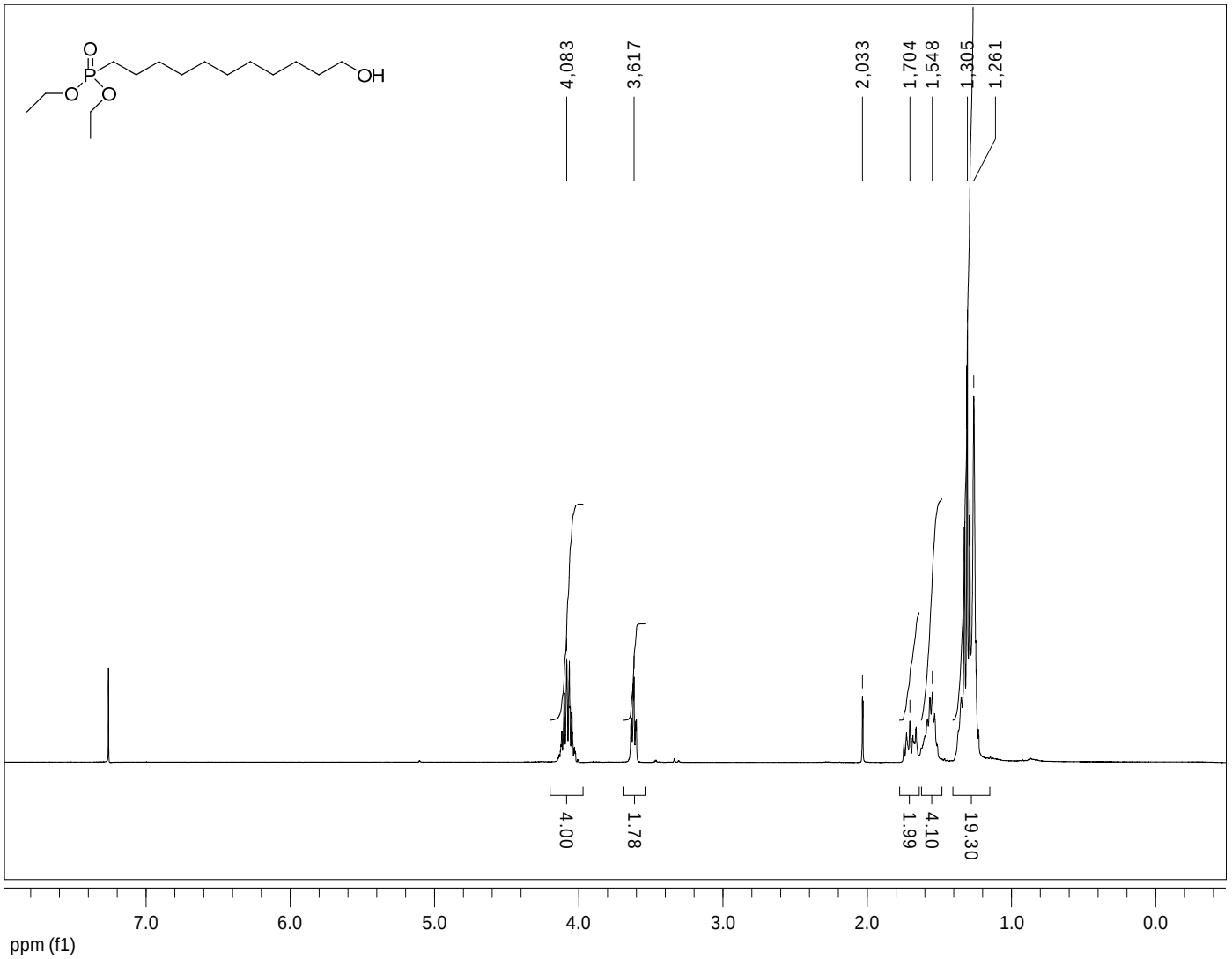


Figure S7. ^{1}H NMR spectrum **3** in chloroform.

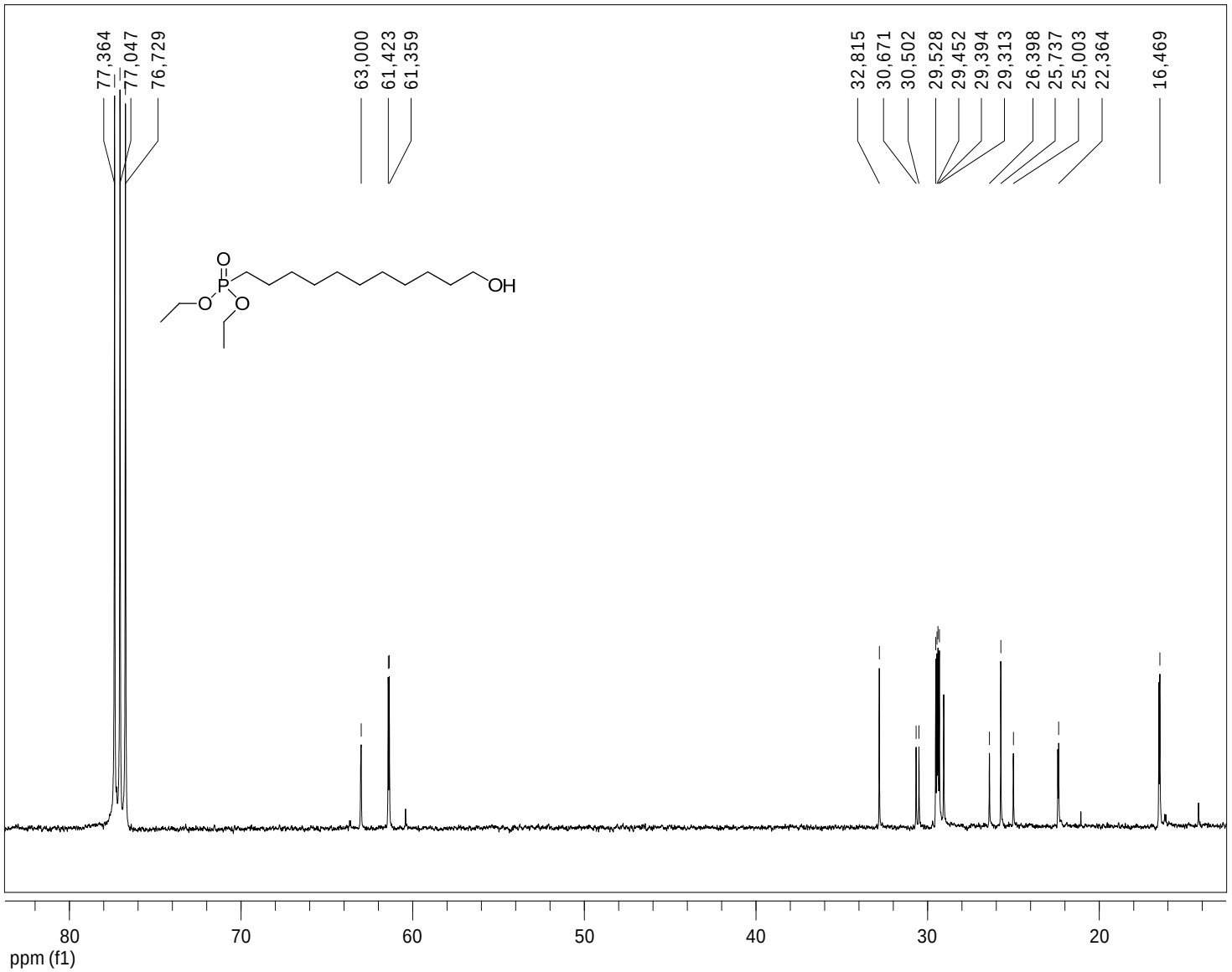


Figure S8. ^{13}C NMR spectrum of **3** in chloroform.

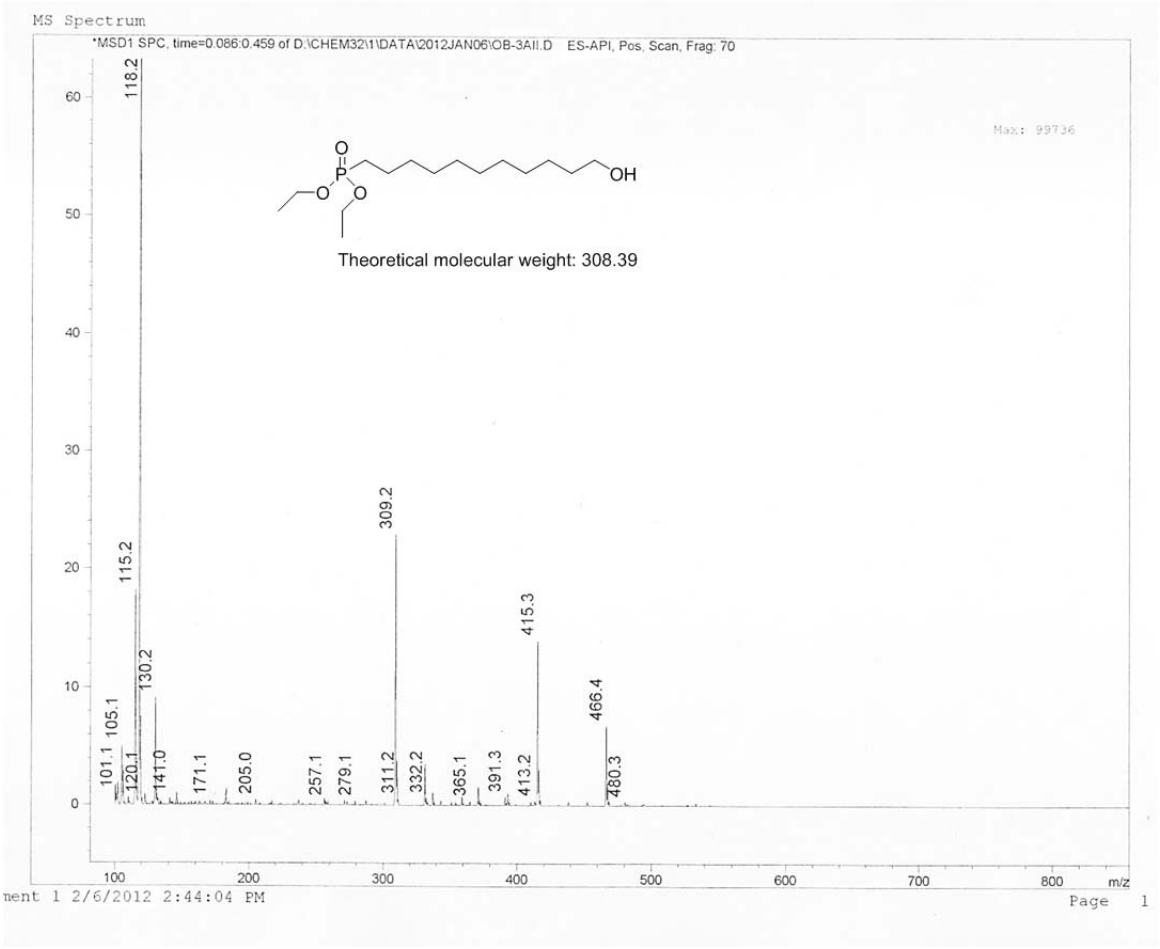


Figure S9. Mass spectrum of **3**.

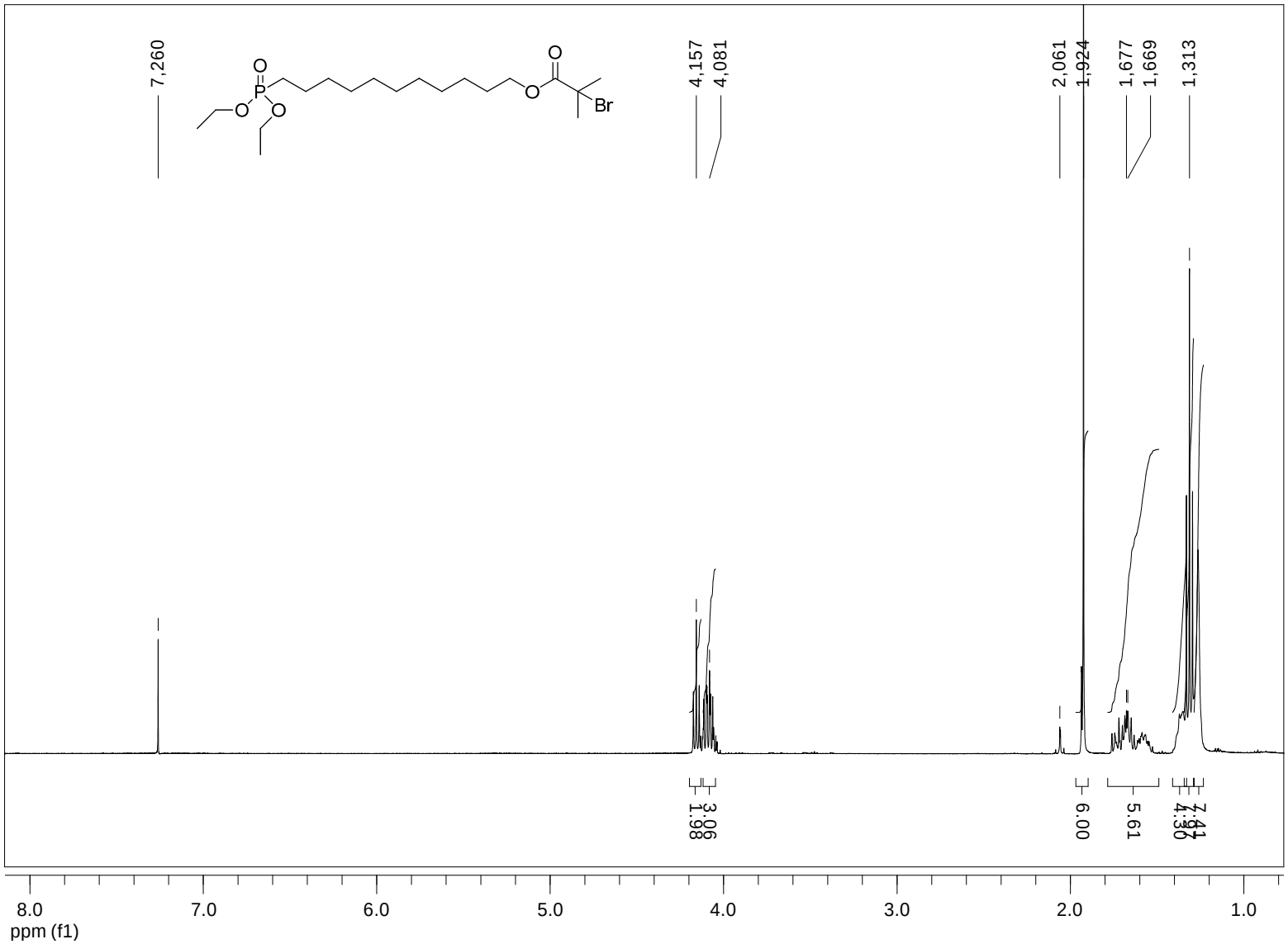


Figure S10. ^{1}H NMR spectrum of **4** in chloroform.

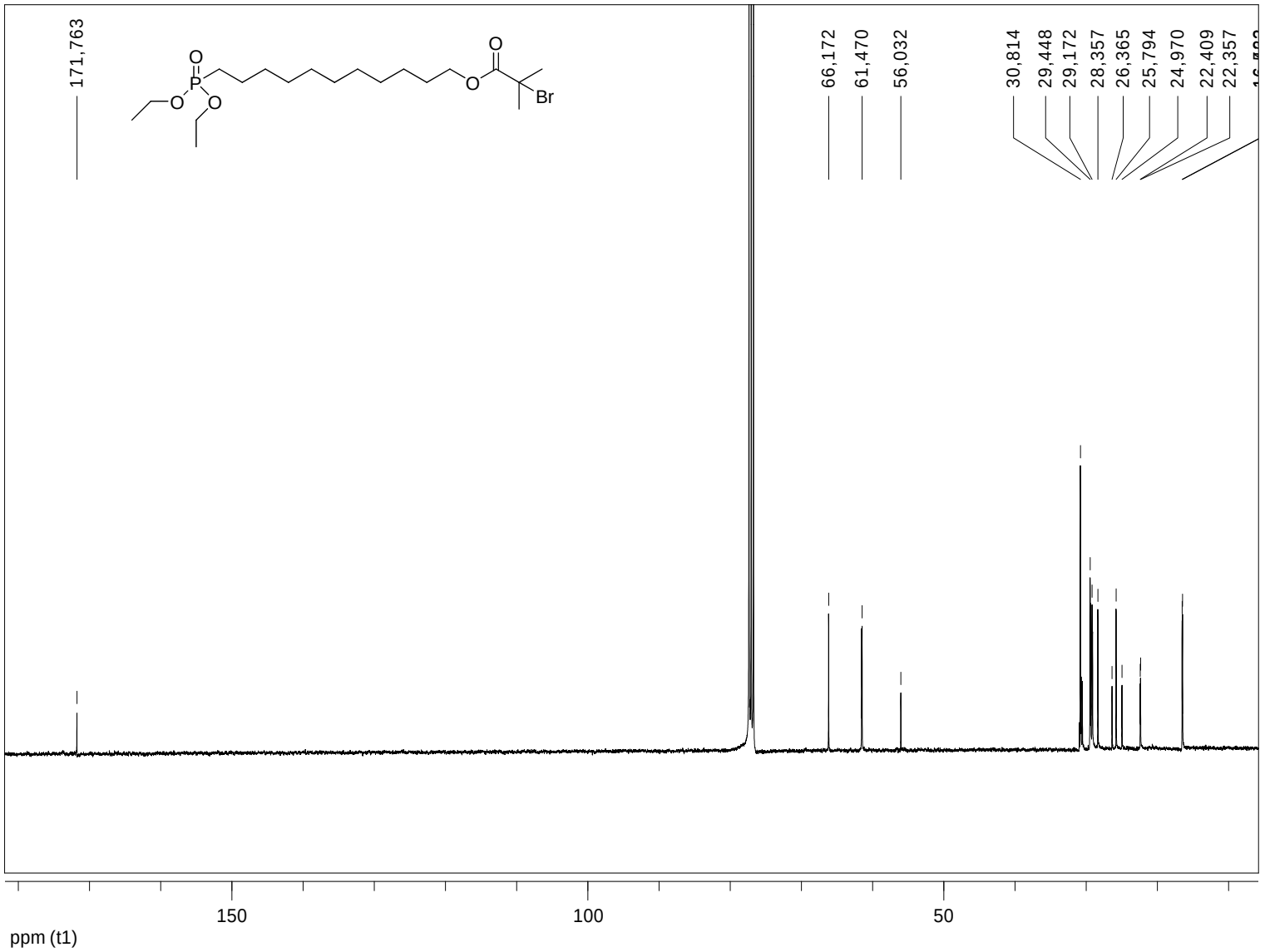


Figure S11. ^{13}C NMR spectrum of **4** in chloroform.

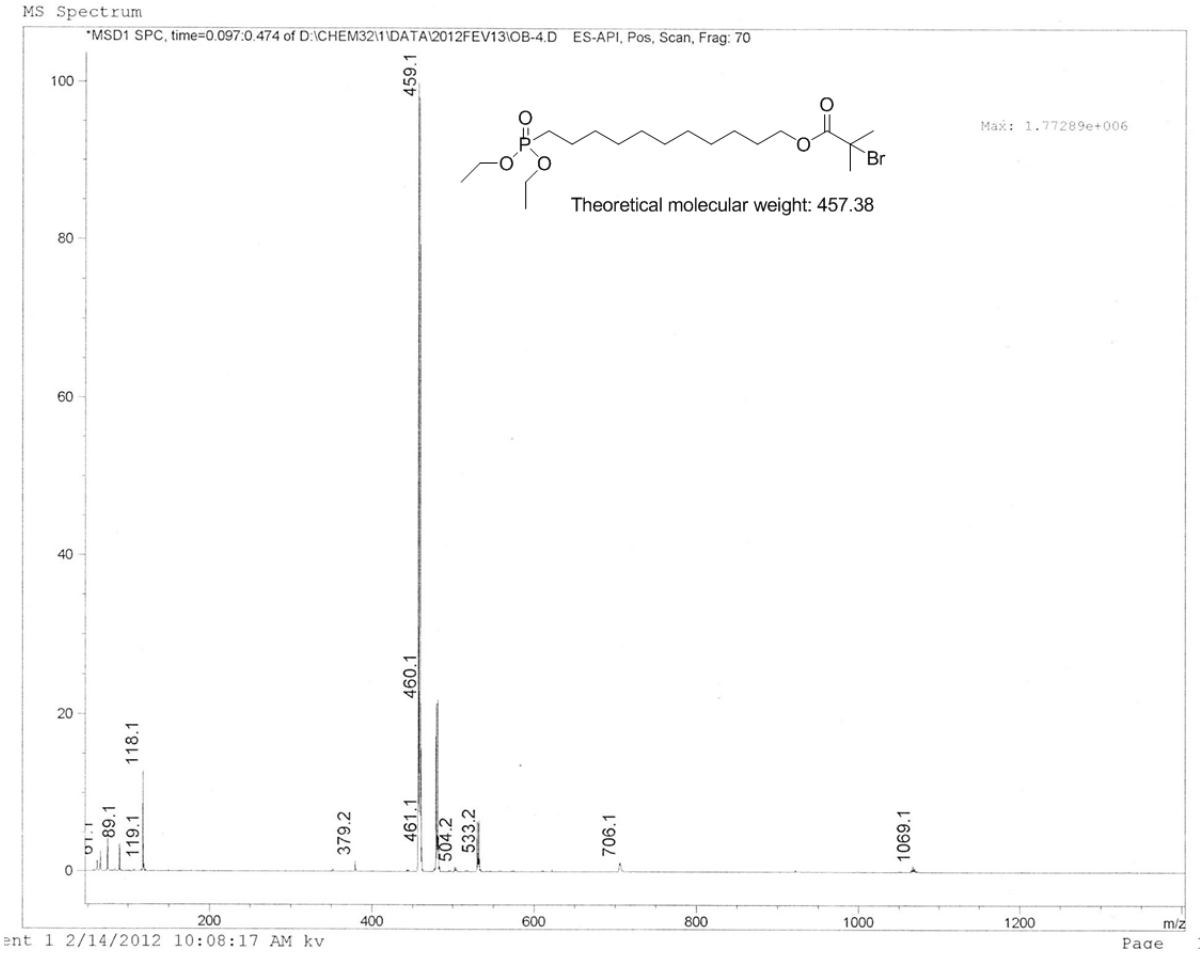


Figure S12. Mass spectrum of **4**.

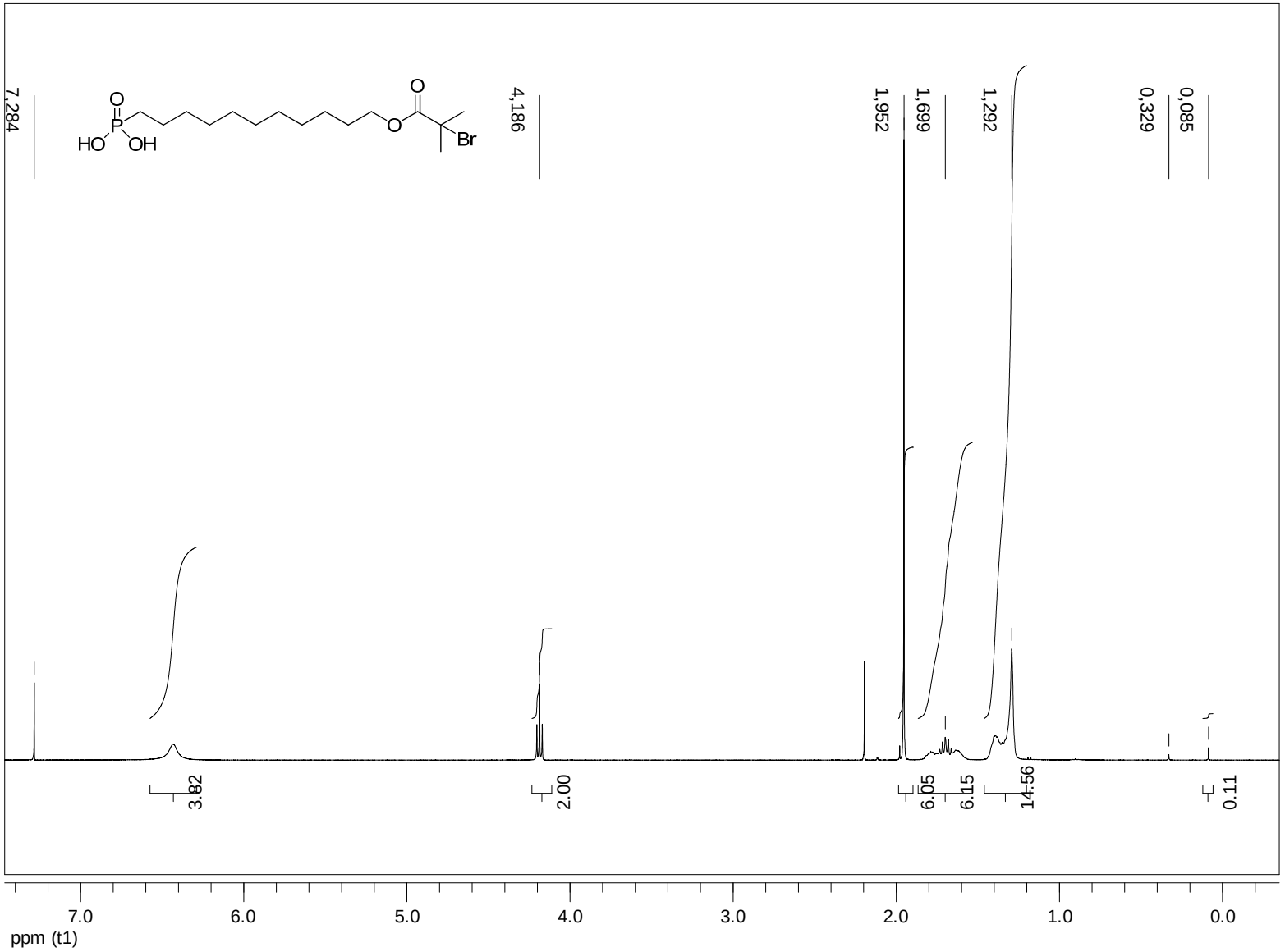


Figure S13. ^{1}H NMR spectrum of **5** in chloroform.

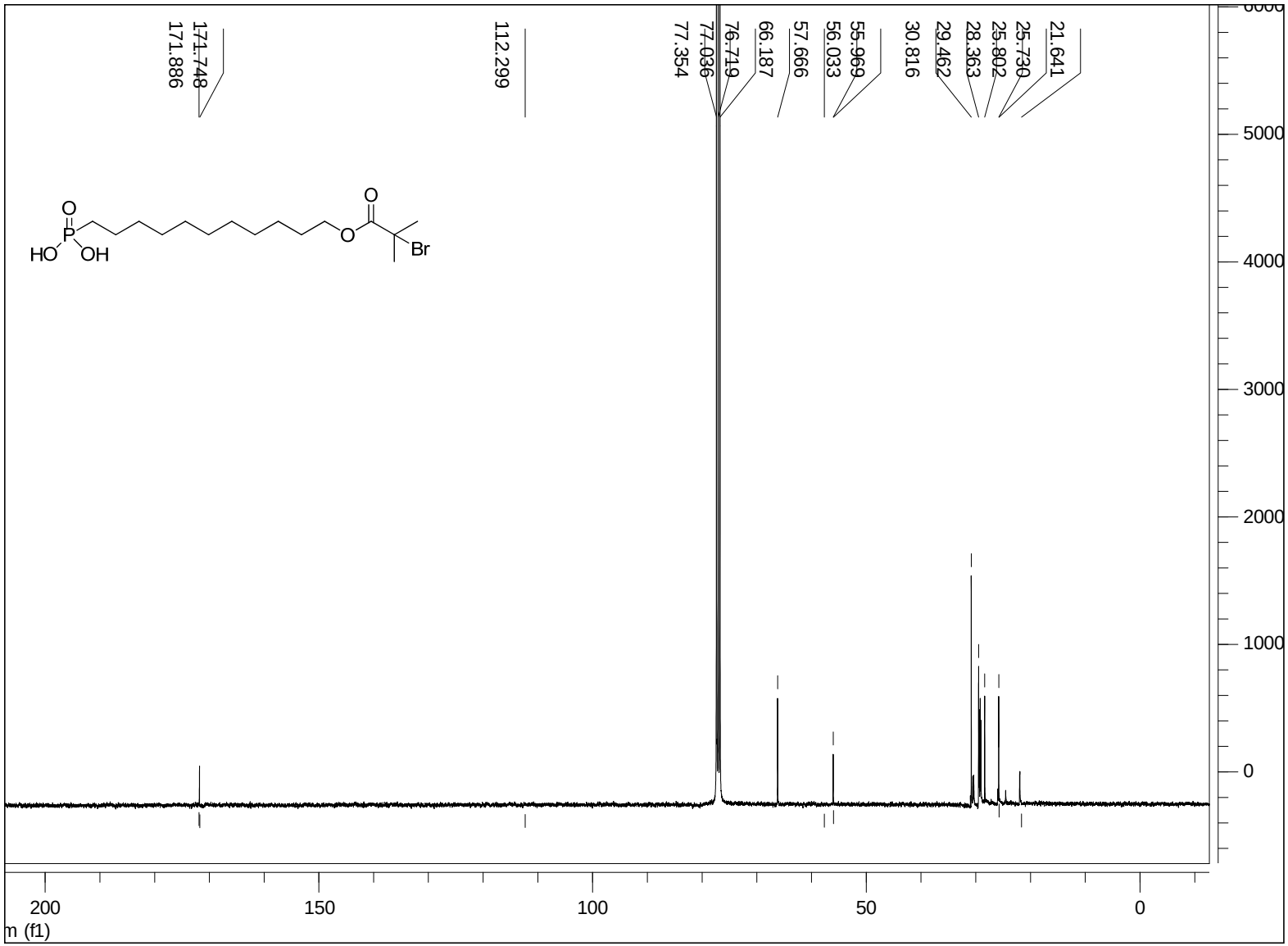


Figure S14. ^{13}C NMR spectrum of **5** in chloroform.

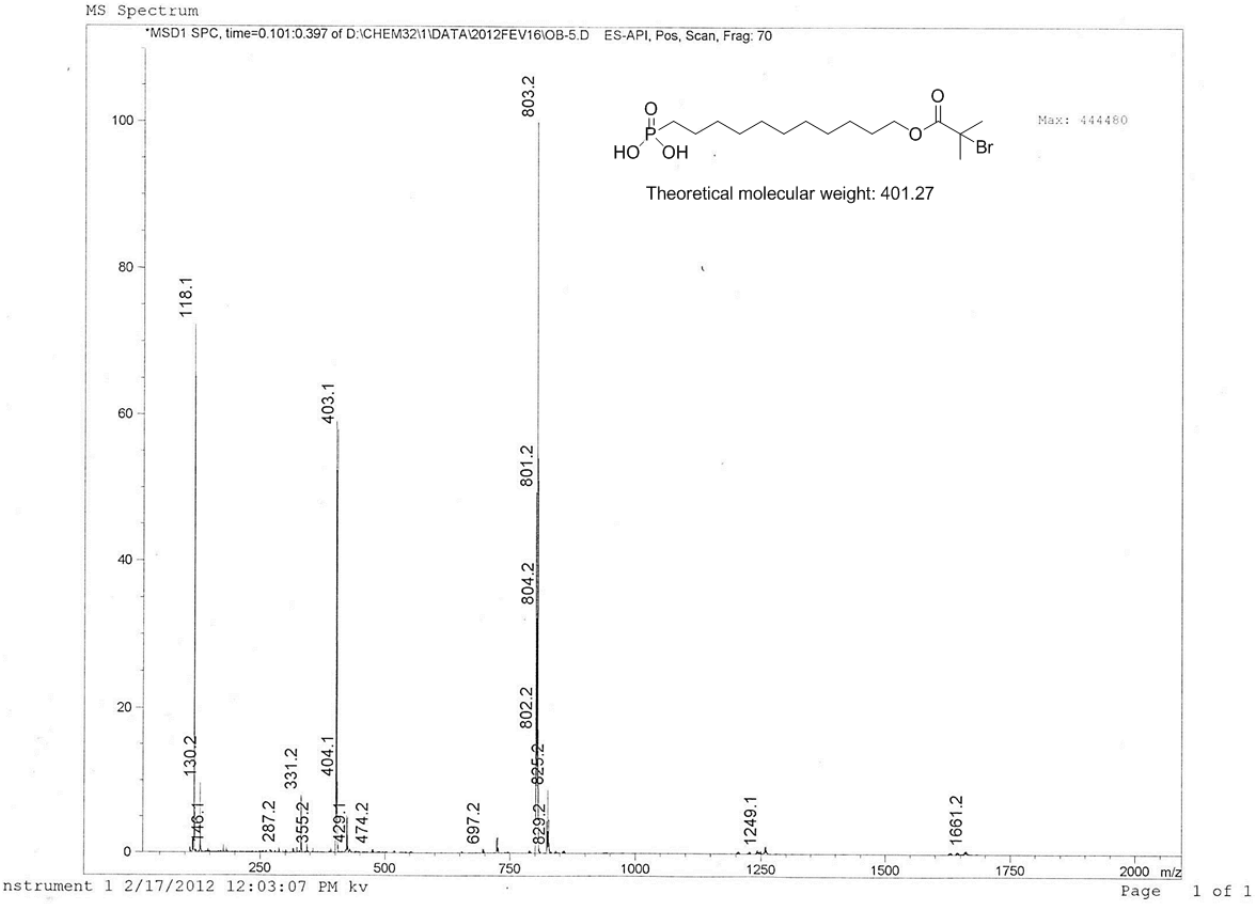
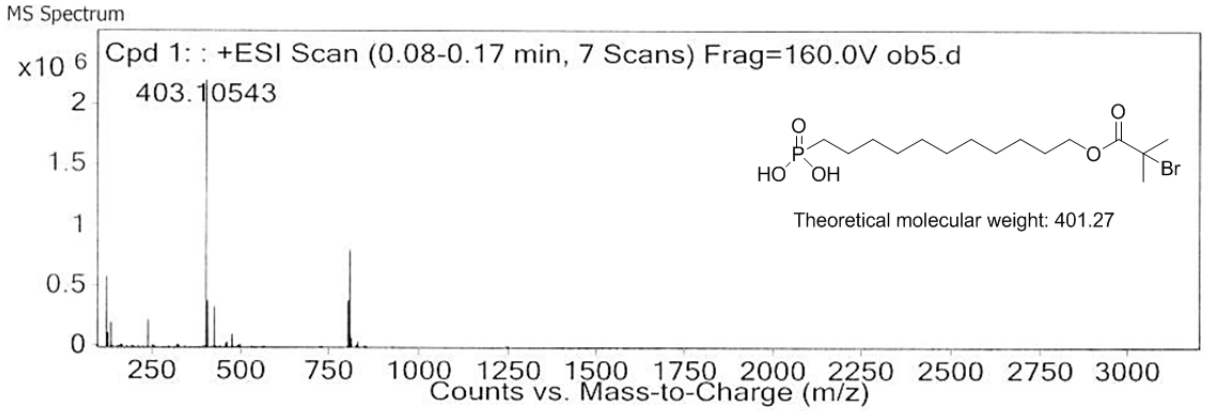
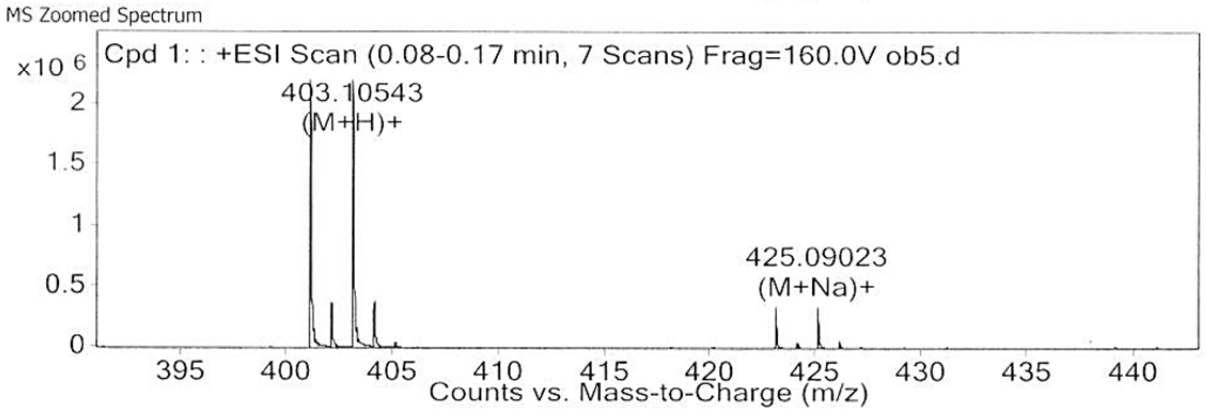


Figure S15. Mass spectrum of **5**.





MS Spectrum Peak List

Ion	Ion Formula	Abund	*Expe. m/z*	*Calc. m/z*	Diff(ppm)
(M+H)+	C15H31BrO5P	2244287.5	401.10728	401.1087	-3.53
(M+Na)+	C15H30BrNaO5P	349695.1	423.09209	423.09064	3.41

Figure S16. High resolution mass spectrum of **5**.

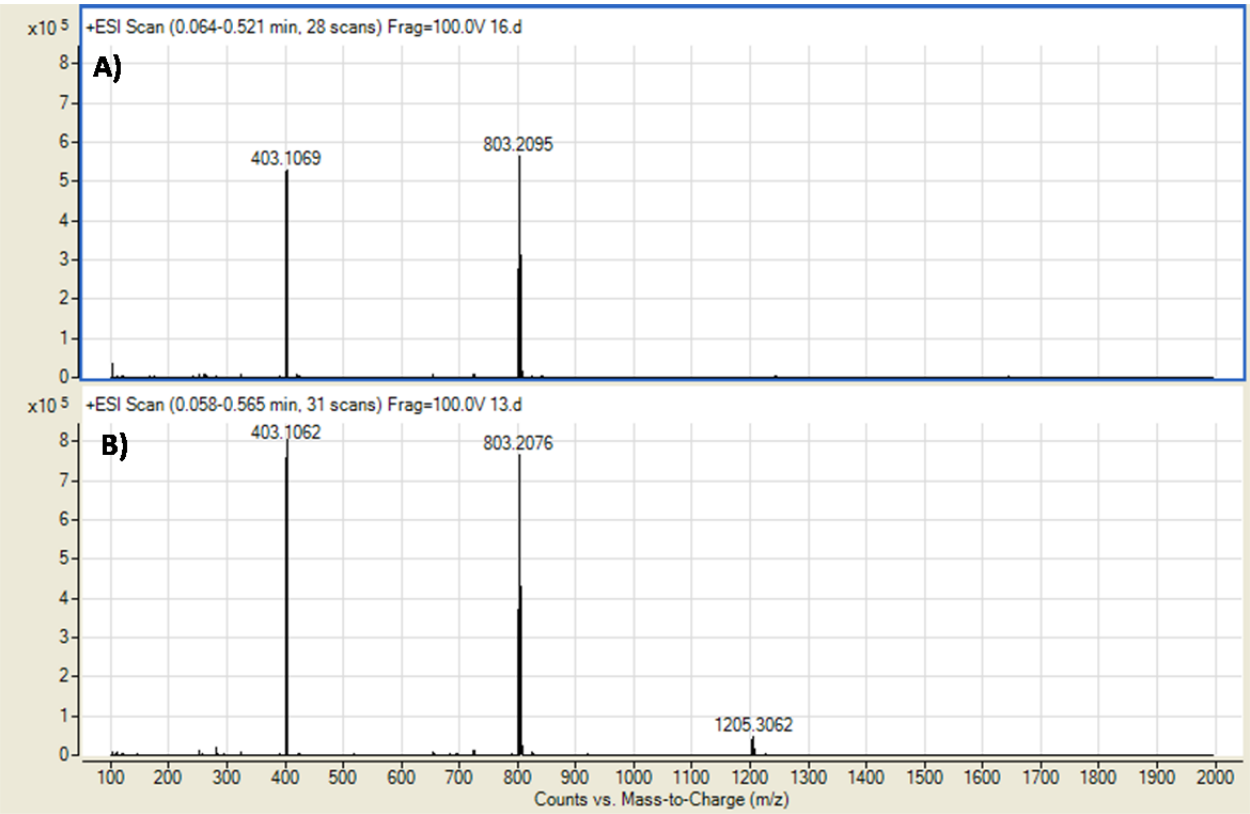


Figure S17. High resolution mass spectra of freshly synthesized **5** (B) after 5 recycling cycles.

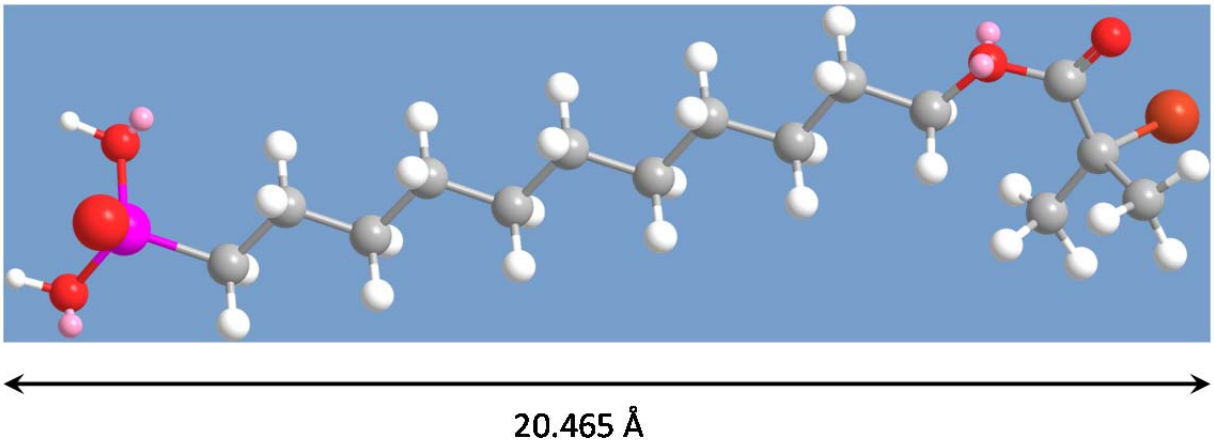


Figure S18. Theoretically calculated length of PI after energy minimization using Chem3D option MM2, with a RMS gradient of 0.100.

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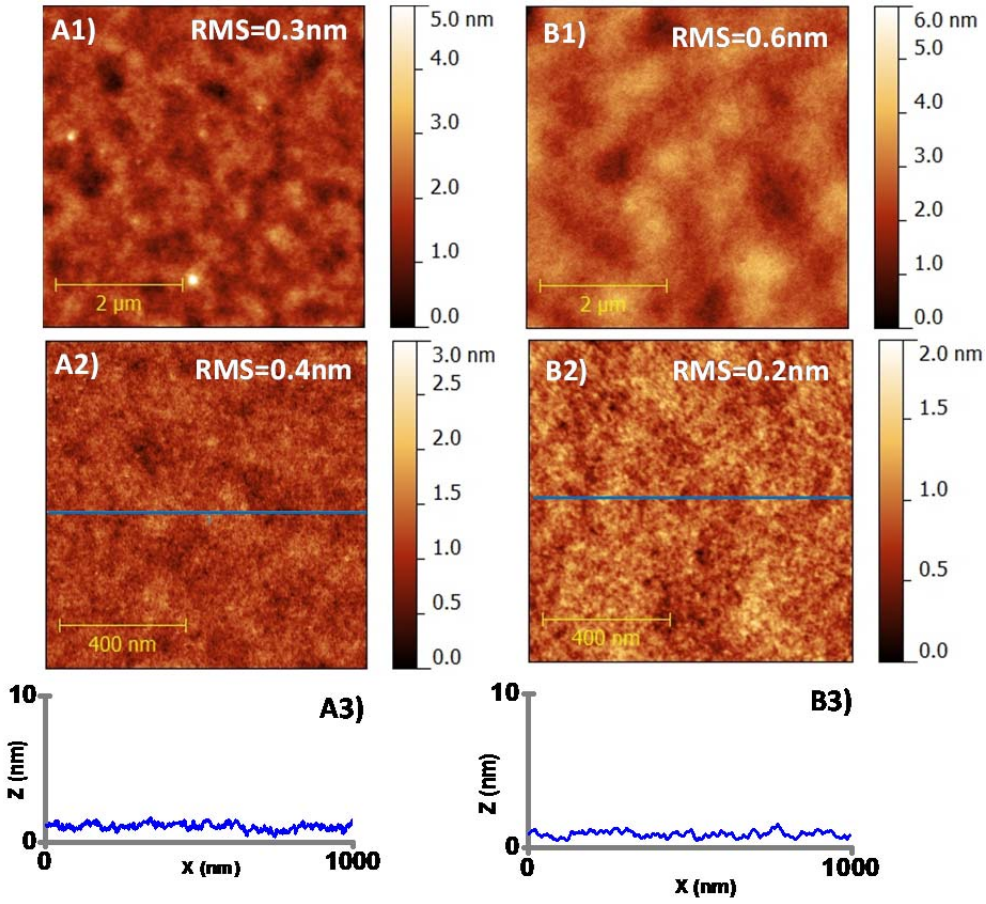

Figure S19. PAA (A) and PSPMA (B) brushes on silica. Polymer grafting reaction was performed with the conventional (siloxane) initiator. Thickness of PAA layer = 120 nm and PSPMA layer =156 nm.

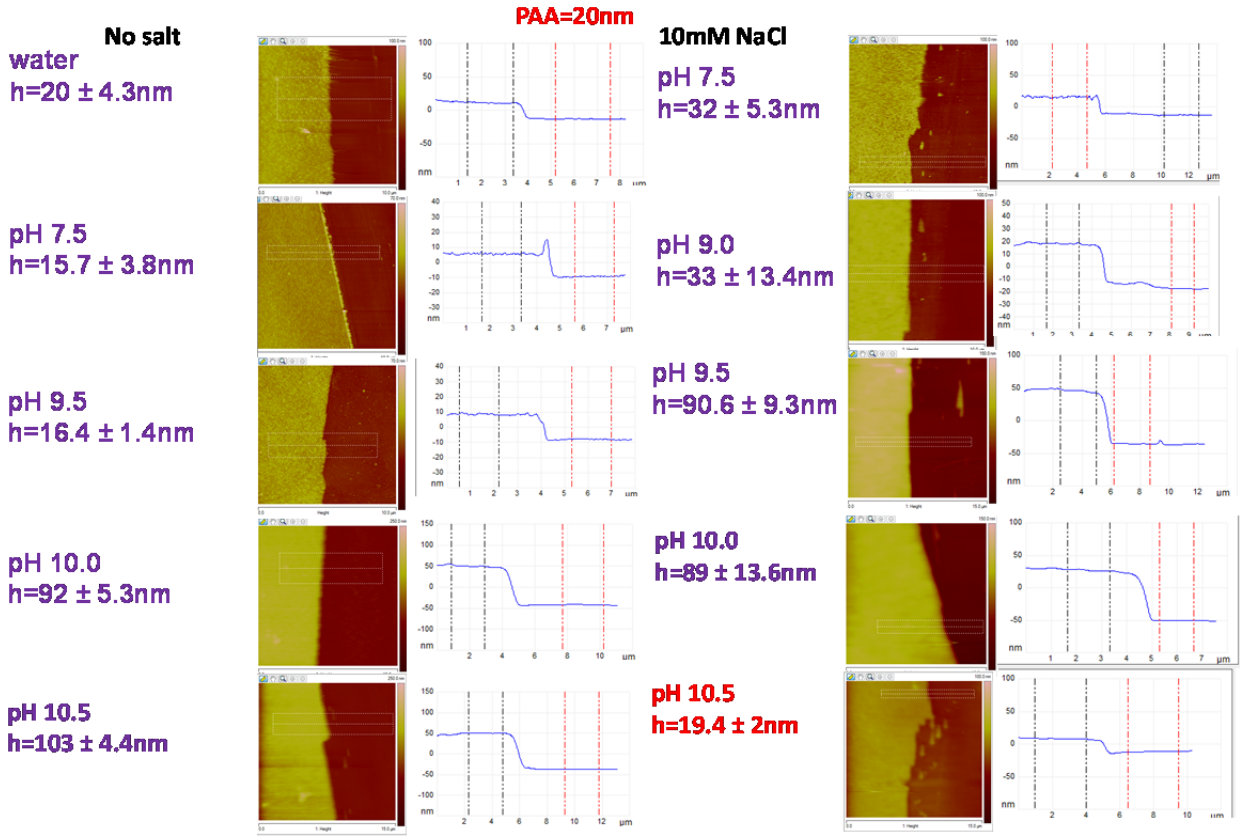

Figure S20. Degrafting studies of PAA brushes synthesized from PI-modified silica wafer. (thickness of PAA layer in air = 20nm)