

Supporting Information

Multivalent Carbohydrate-Functionalized Polymer Nanocrystals

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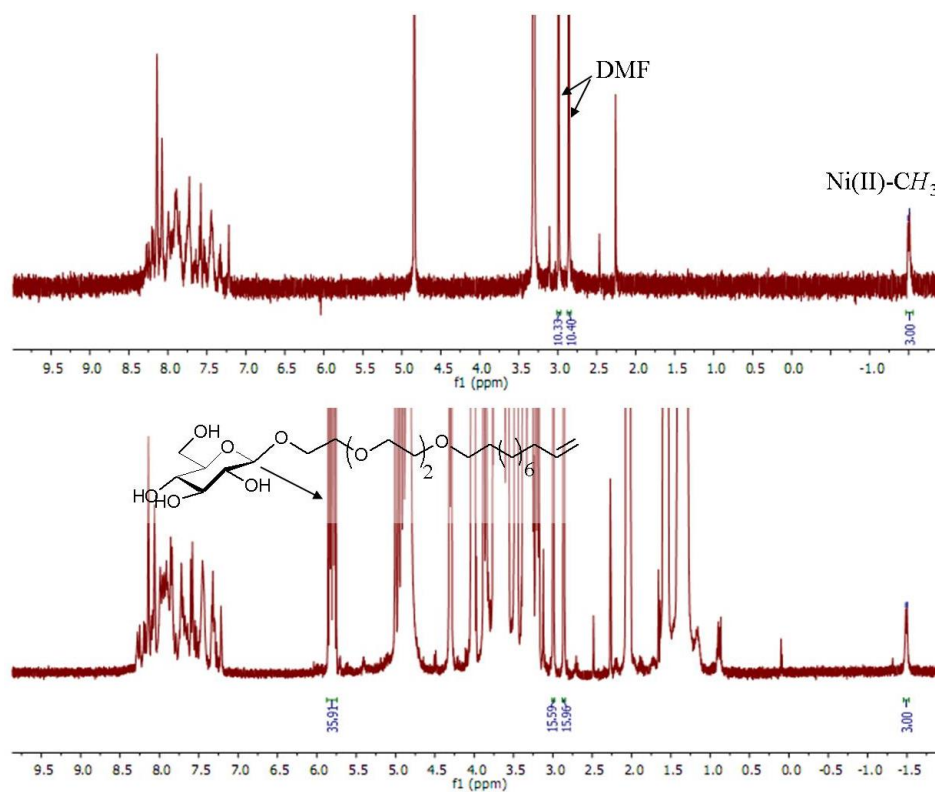


Figure S1. ¹H NMR spectra of precatalyst **1a** in CD₃OD (top) ([**1a**] = 4.7 mM), and after the addition of 30 eq. monomer containing a -(OCH₂CH₂)₃-glucose group ([monomer] = 137 mM) and storing at room temperature for 48 h (bottom). Both spectra were acquired at 298K.

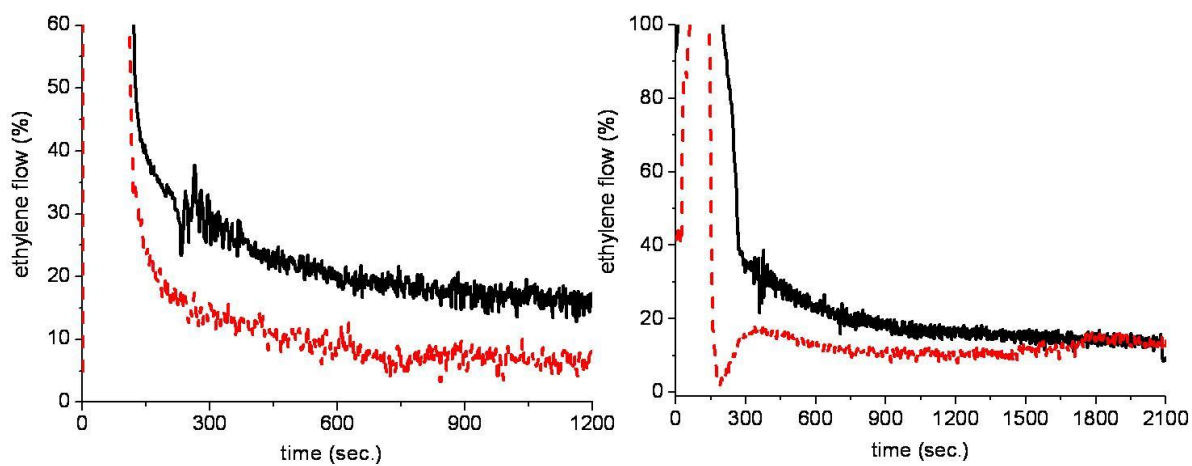


Figure S2. Mass flow plots of the ethylene homopolymerizations (solid black lines) and copolymerizations of ethylene with comonomer A (dashed red lines) with catalyst precursor **1a** (left) and **2a** (right), respectively.

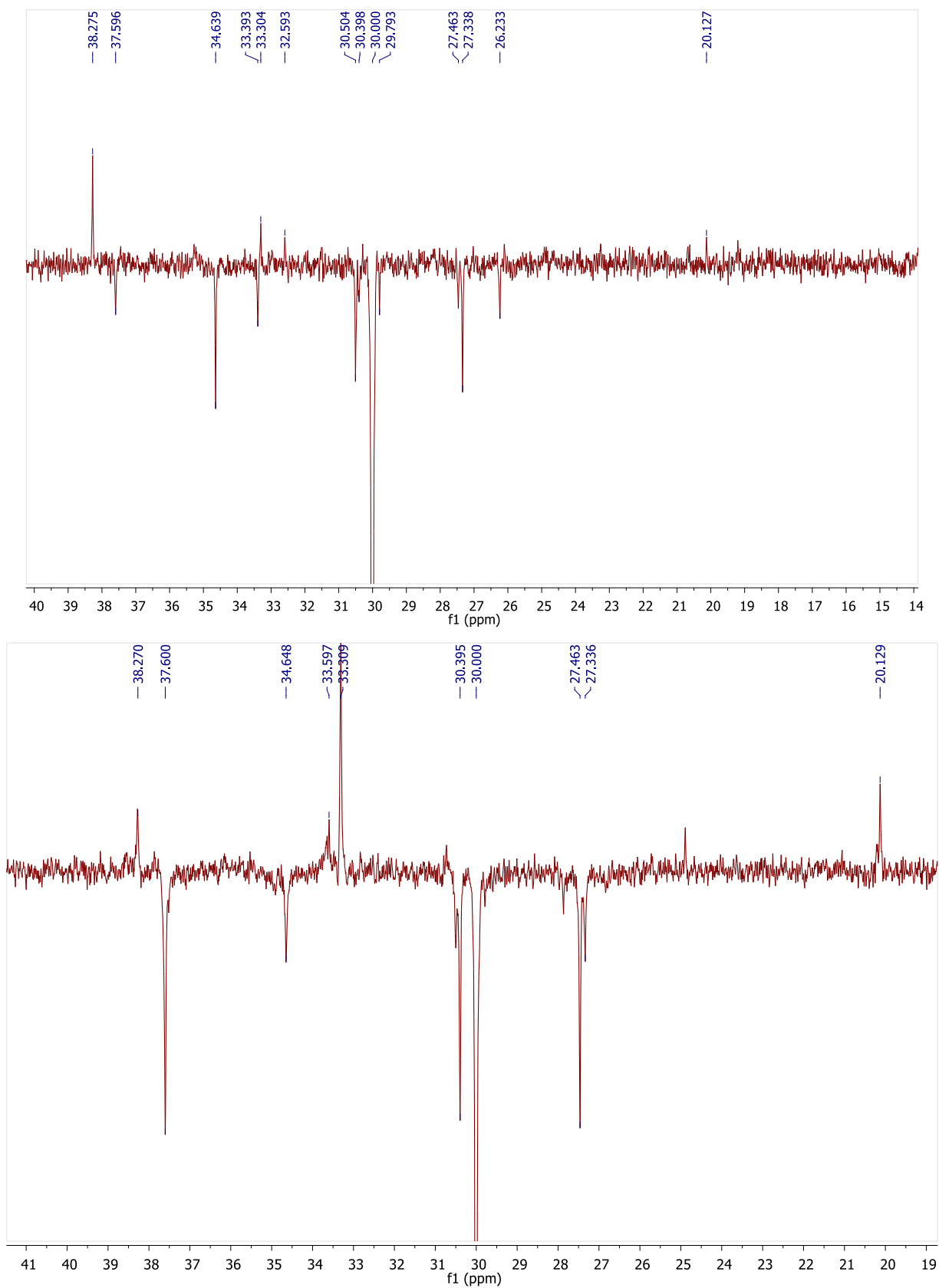


Figure S3. DEPT (135°) of the isolated copolymers from entry 1 (top) and 2 (bottom) (Table 1). Note that the unassigned resonance at 33.37 ppm (Figure 1) corresponds to a methylene carbon.

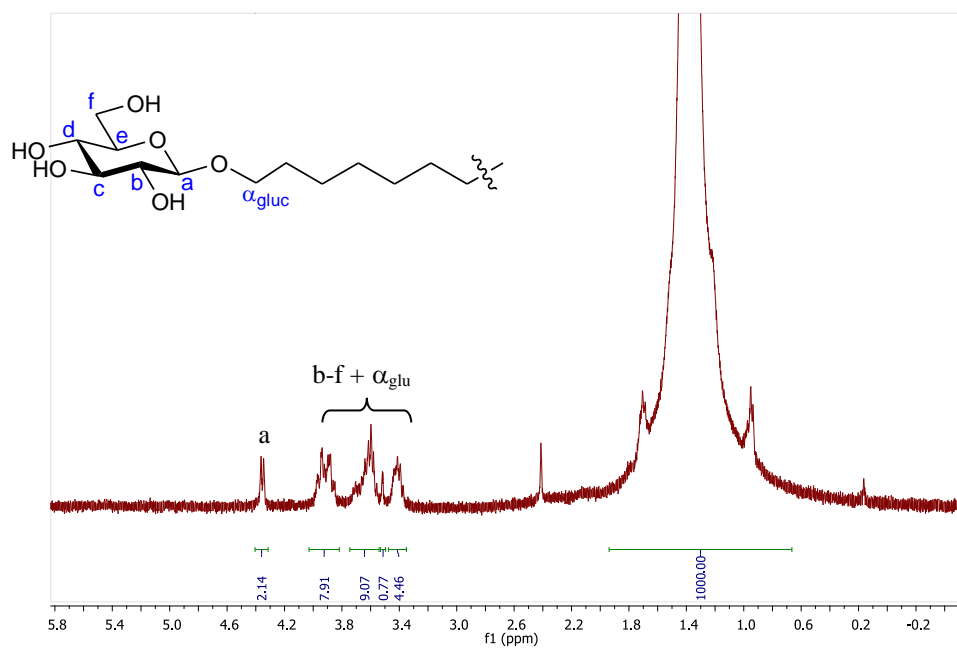
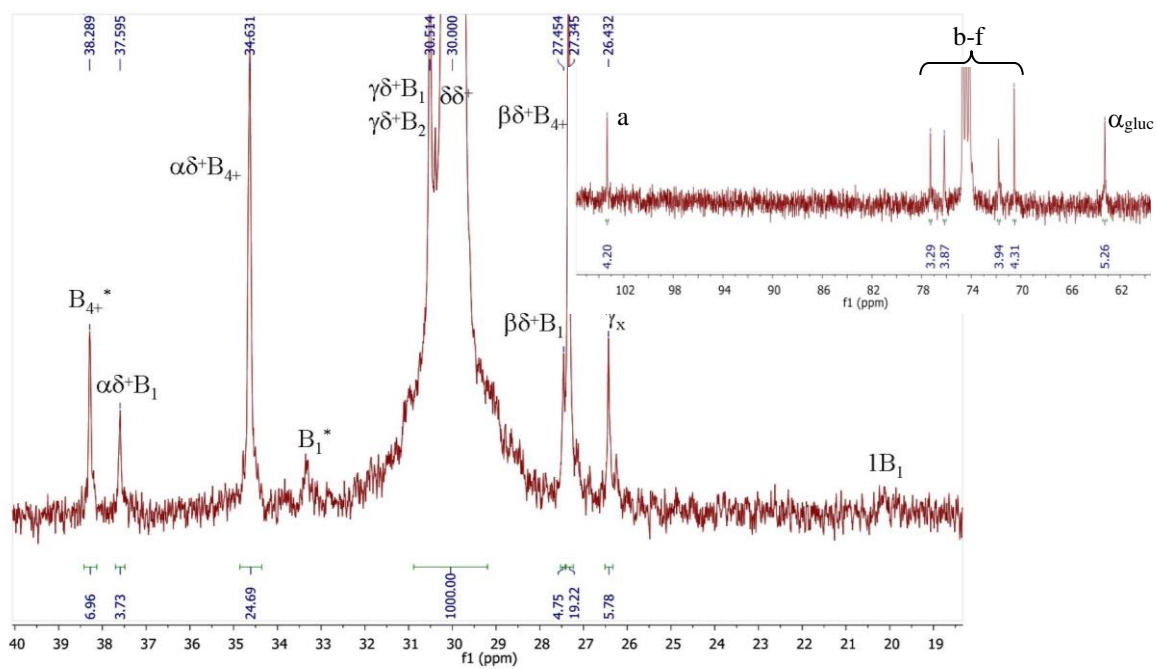


Figure S4. ^{13}C NMR and ^1H NMR of the isolated copolymer from entry 3 (Table 1).

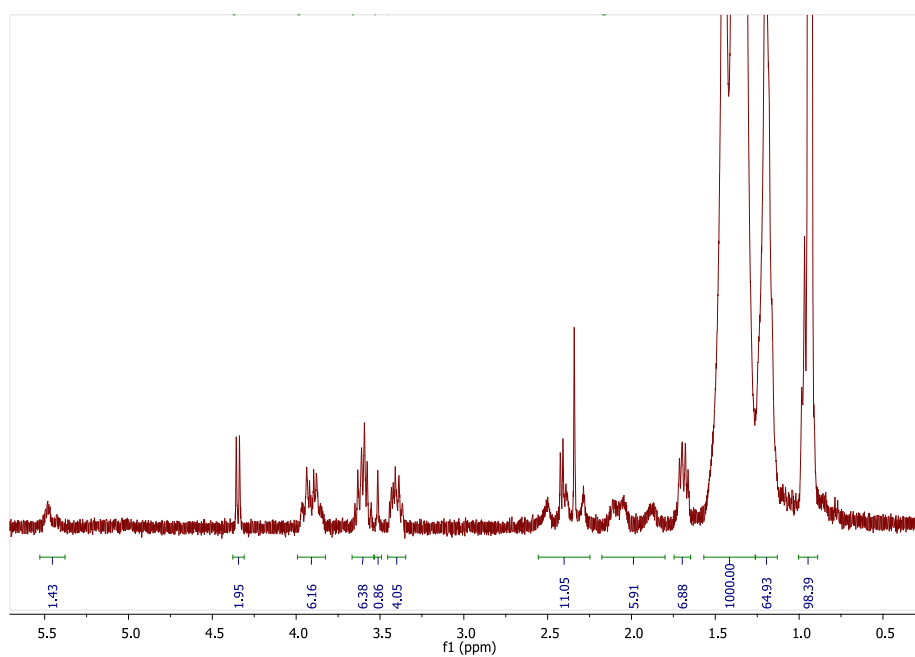
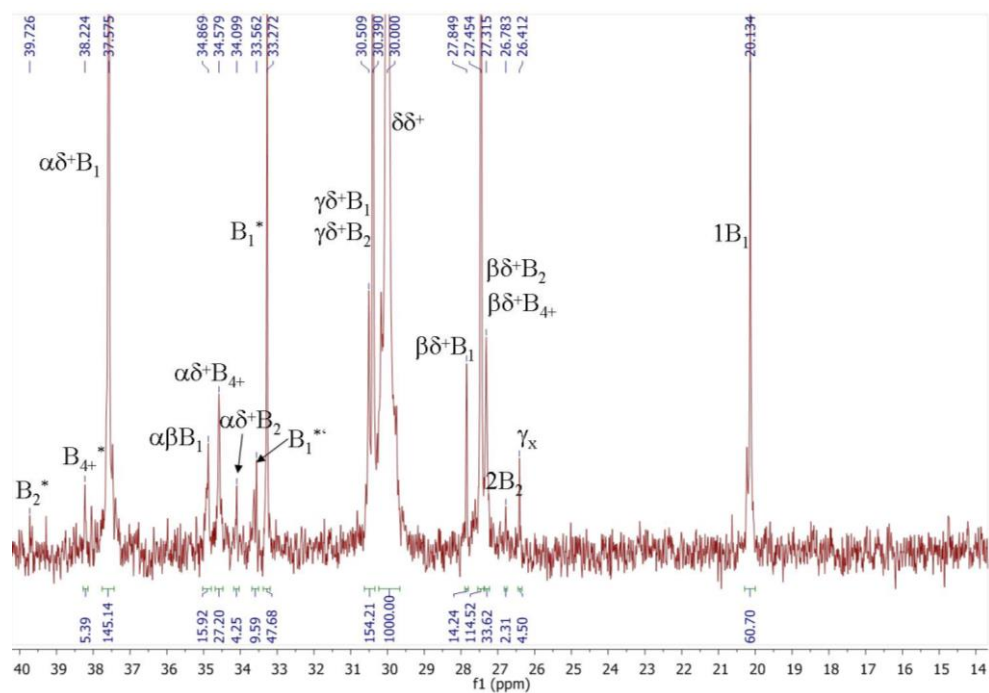


Figure S5. ^{13}C NMR and ^1H NMR of the isolated copolymer from entry 4 (carbon resonances of the α_x carbon and the glucose group not shown here due to similarity to the spectra of entry 3).

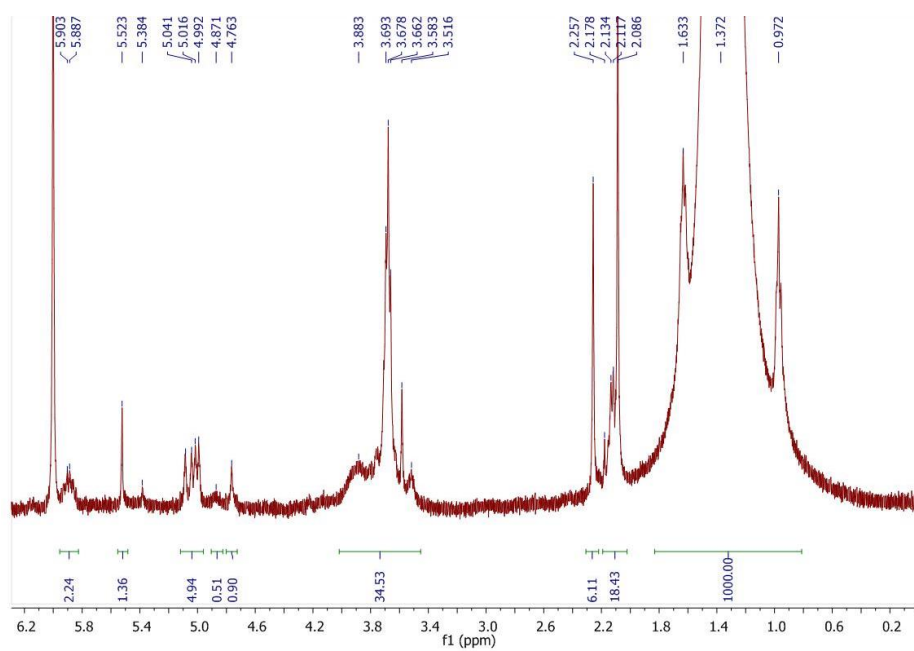
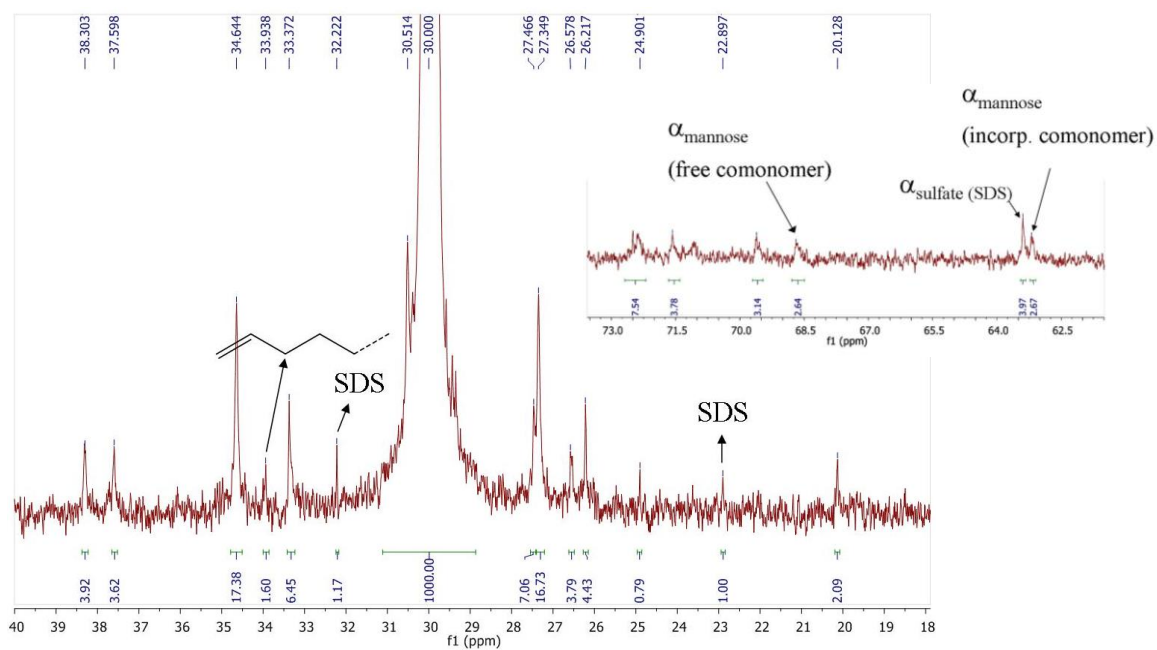


Figure S6. ^{13}C NMR and ^1H NMR of the isolated copolymer via lyophilizing dialyzed dispersion entry 5 (Table 1).

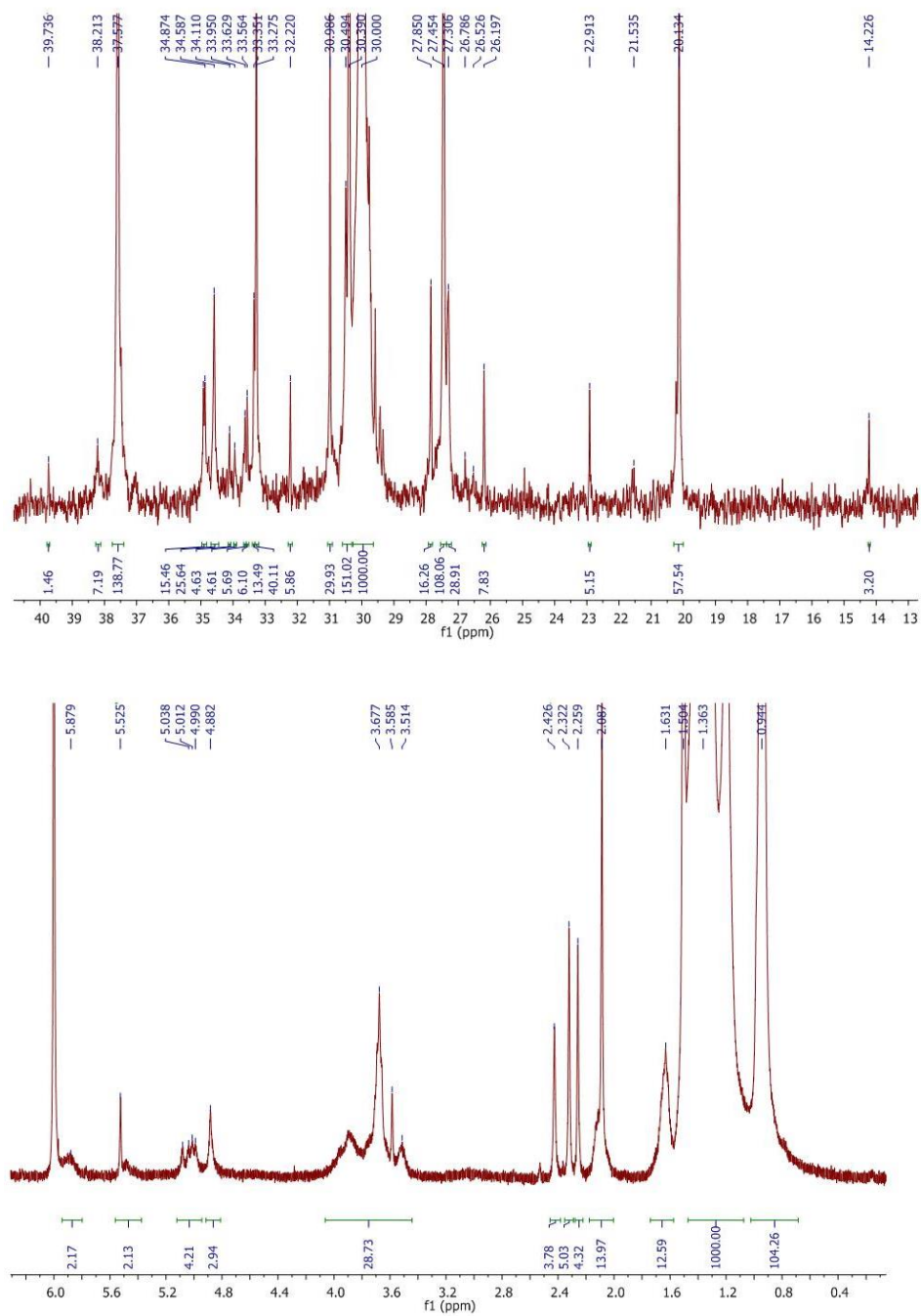


Figure S7. ^{13}C NMR and ^1H NMR of copolymer isolated via lyophilizing dialyzed dispersion entry 6 (only aliphatic carbon signals are shown here).

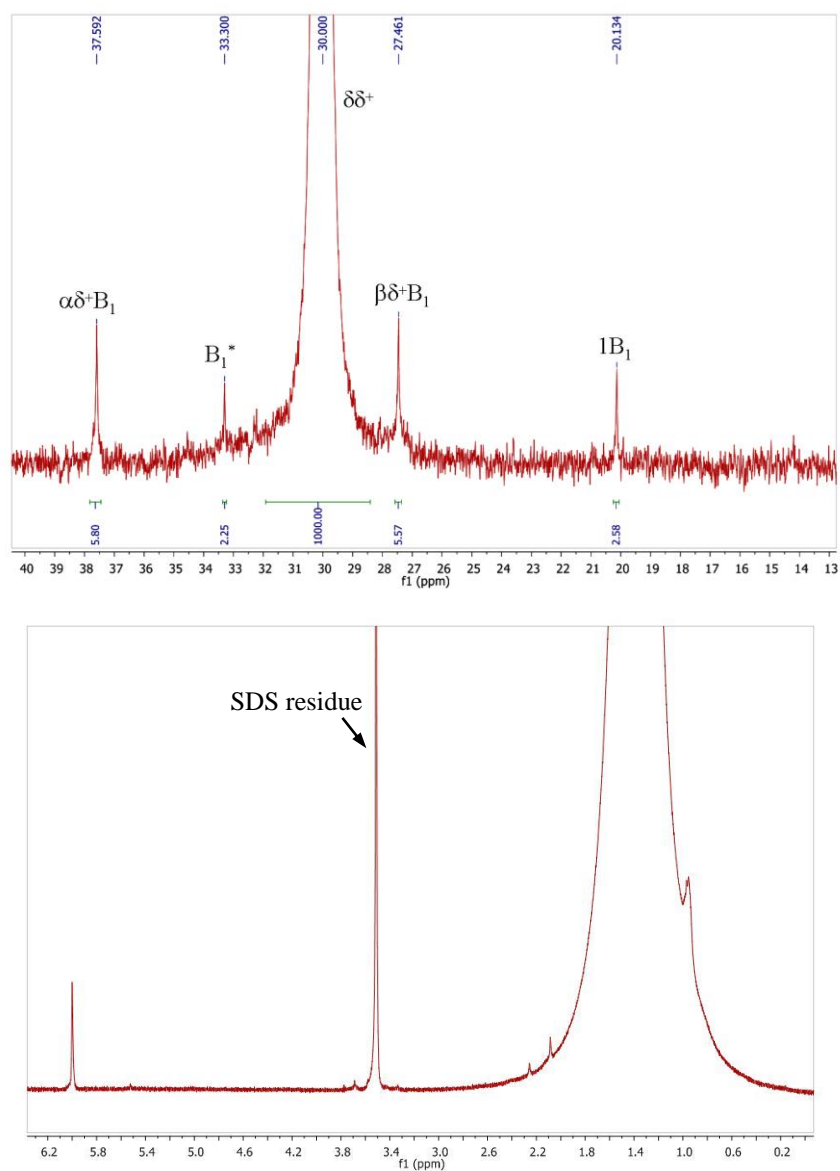


Figure S8. ^{13}C NMR of the isolated homopolyethylene from entry 7.

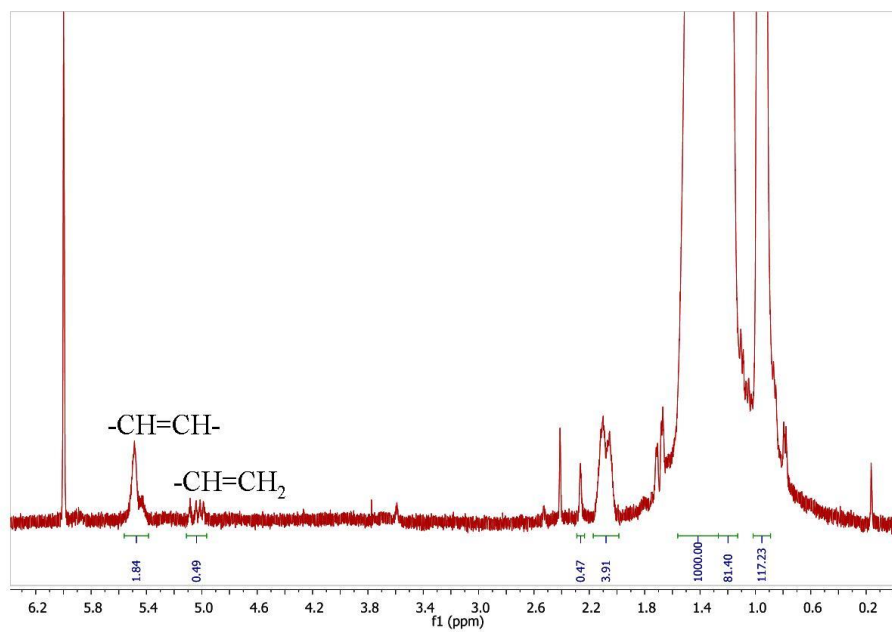
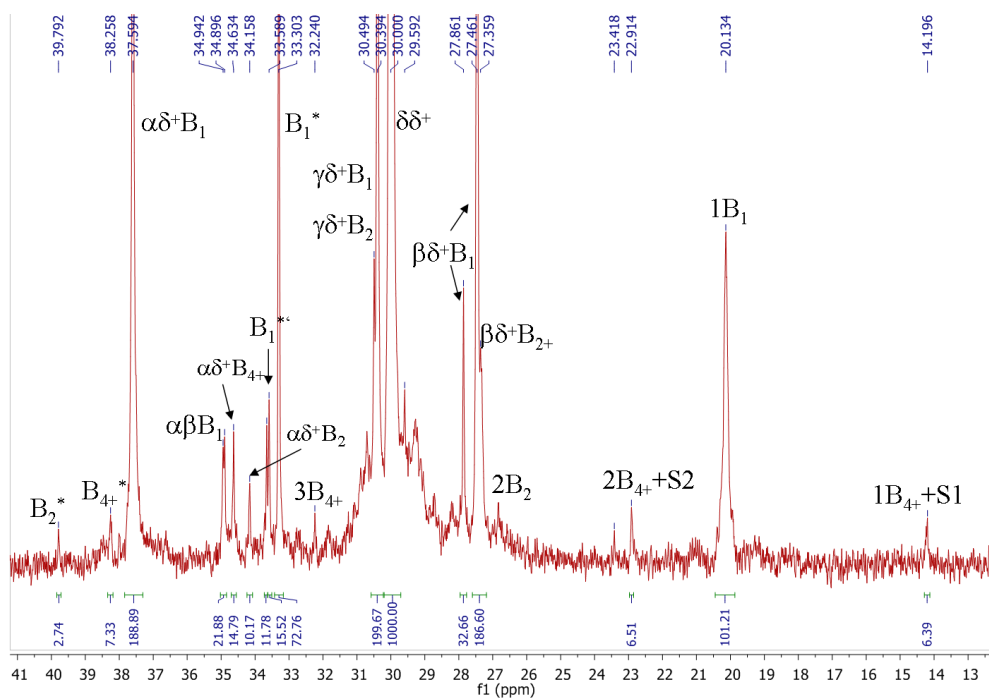


Figure S9. ¹³C NMR and ¹H NMR of the isolated homopolyethylene from entry 8.

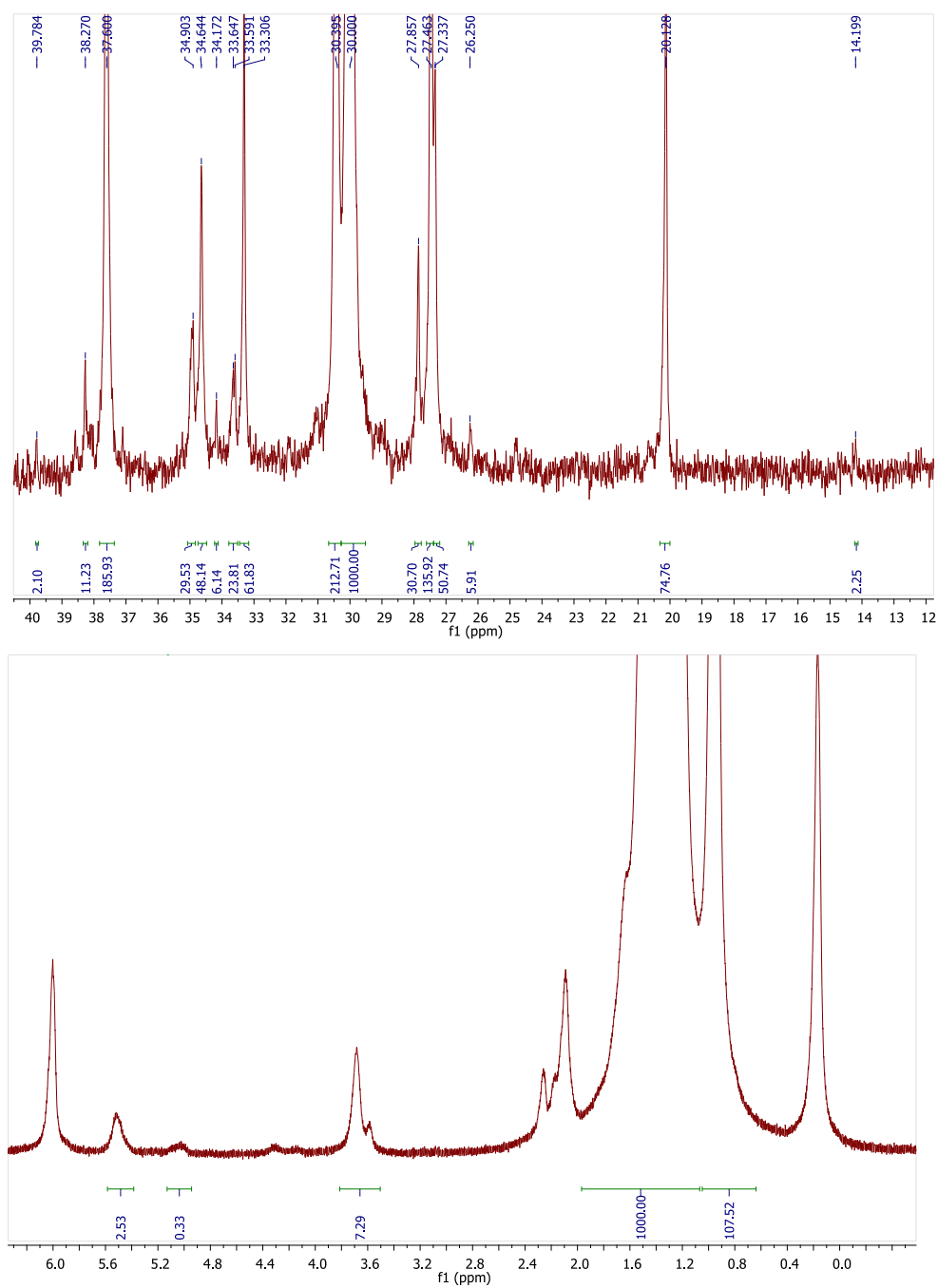
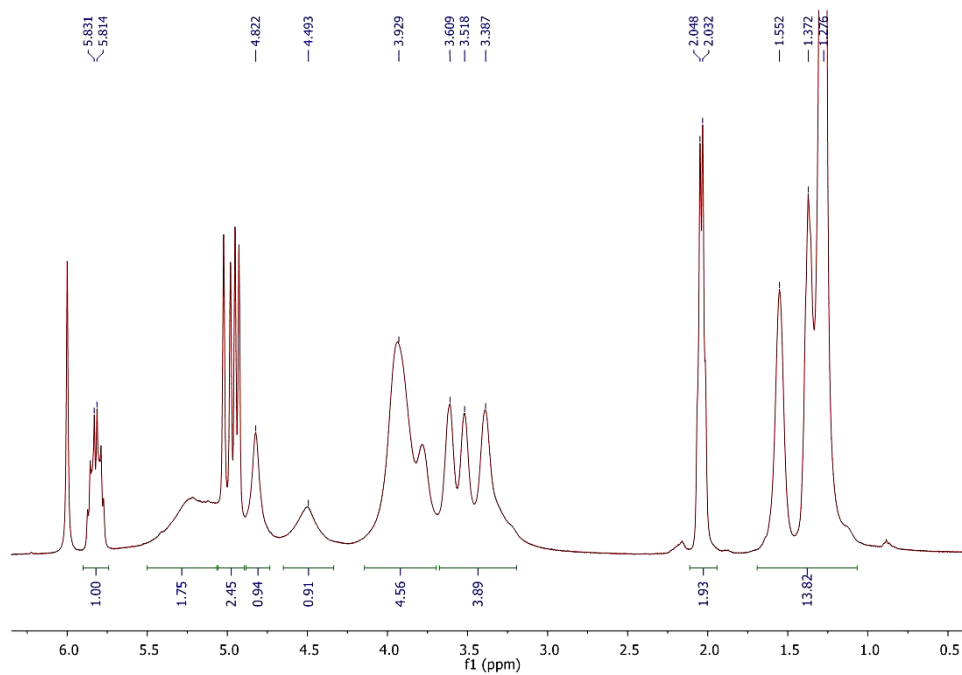
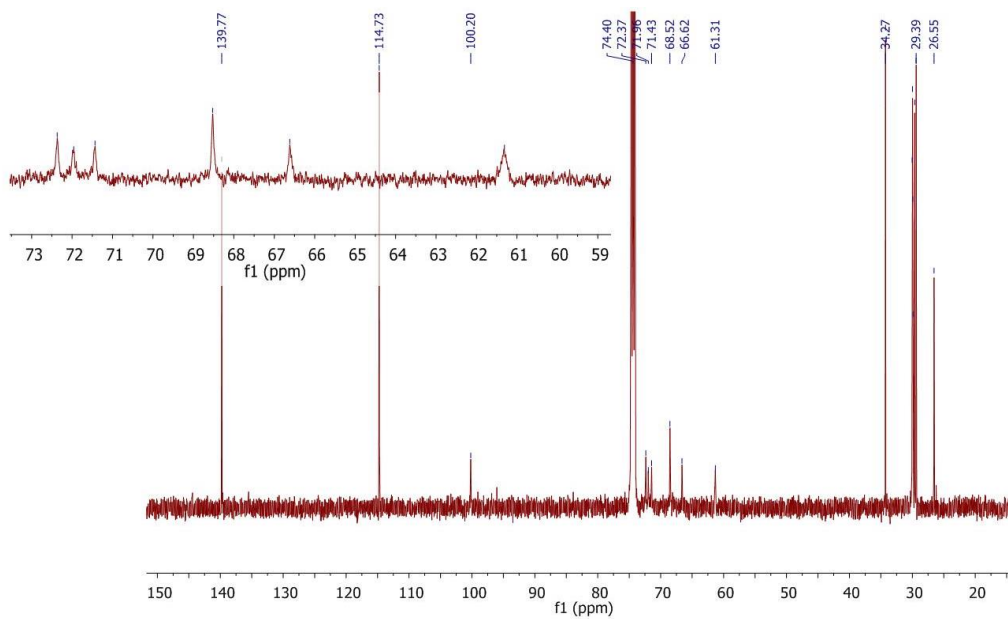


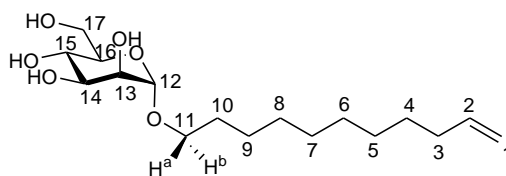
Figure S10. ^{13}C NMR and ^1H NMR of the isolated copolymer from entry 2 after thorough dialysis and isolated by lyophilizing.



(a)



(b)



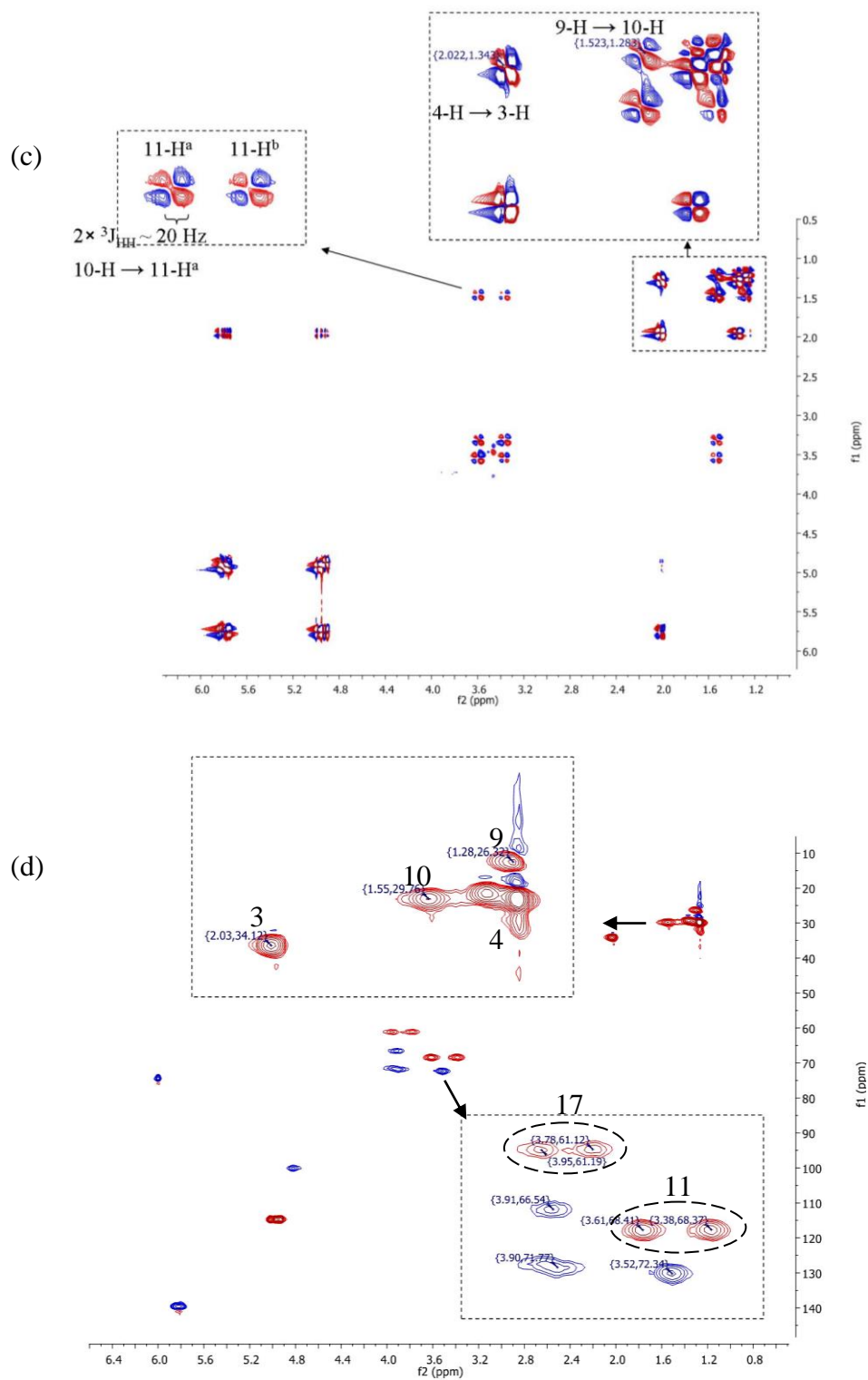
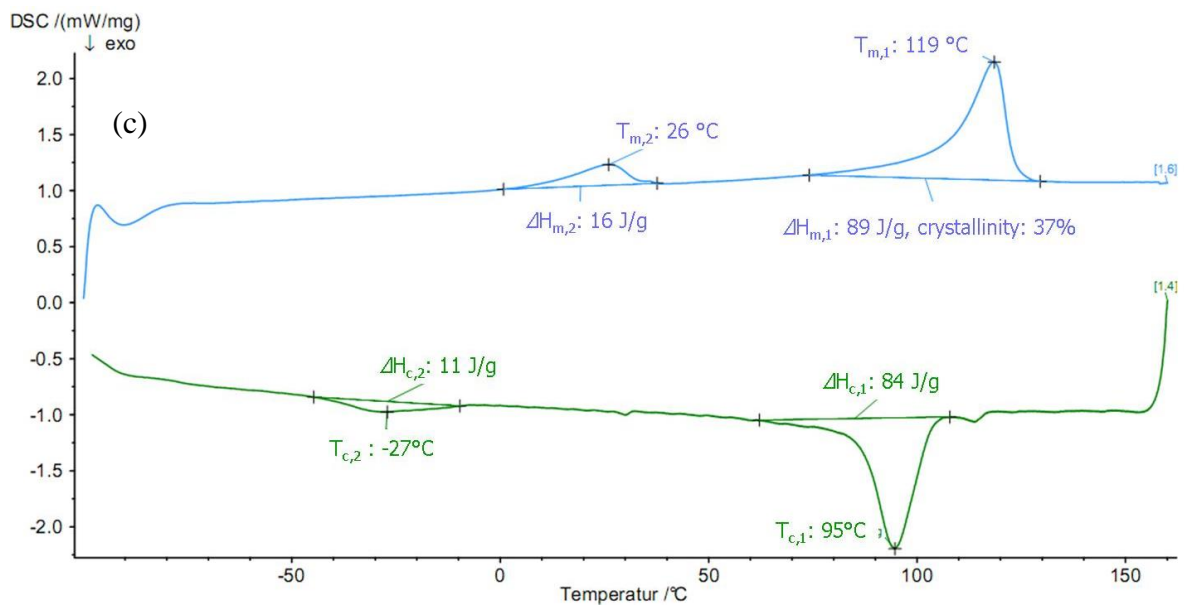
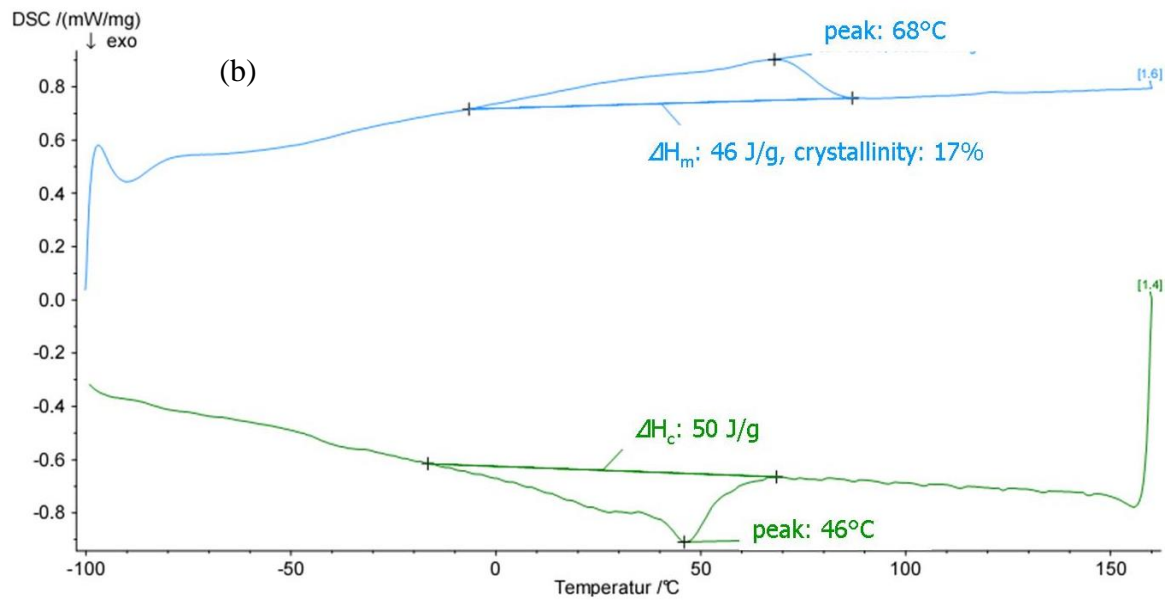
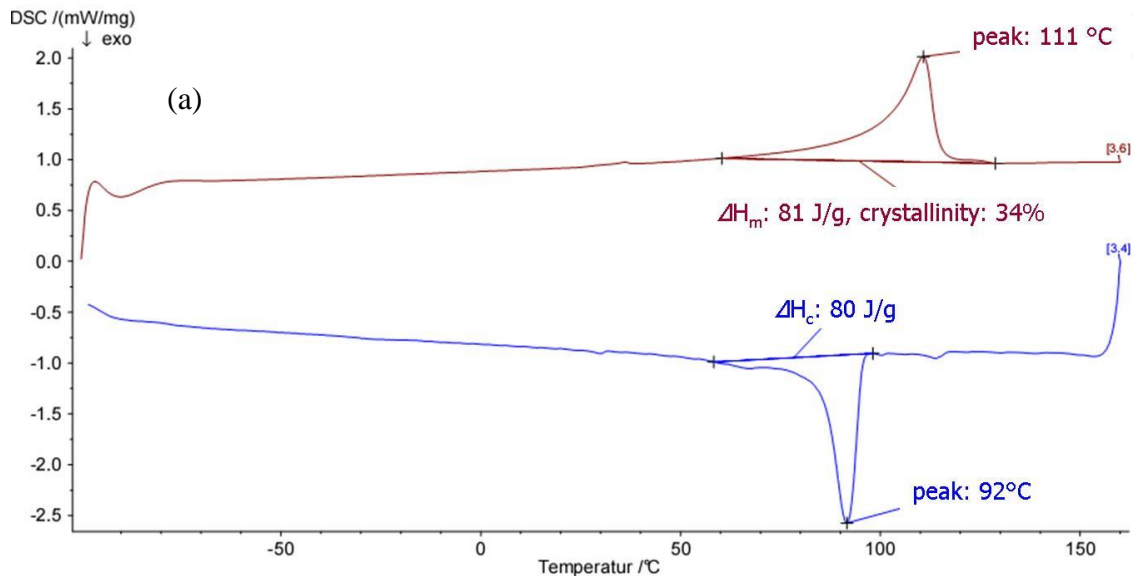


Figure S11. ${}^1\text{H}$ - (a), ${}^{13}\text{C}$ NMR (b), ${}^1\text{H}$, ${}^1\text{H}$ -gCOSY (c) and ${}^1\text{H}$, ${}^{13}\text{C}$ -gHSQC (d) of the free comonomer **B2** in $\text{C}_2\text{D}_2\text{Cl}_4$ at 298K. For direct comparison with the spectra of the copolymer, the chemical shift of carbon in $\text{C}_2\text{D}_2\text{Cl}_4$ is referenced as 74.4 ppm.



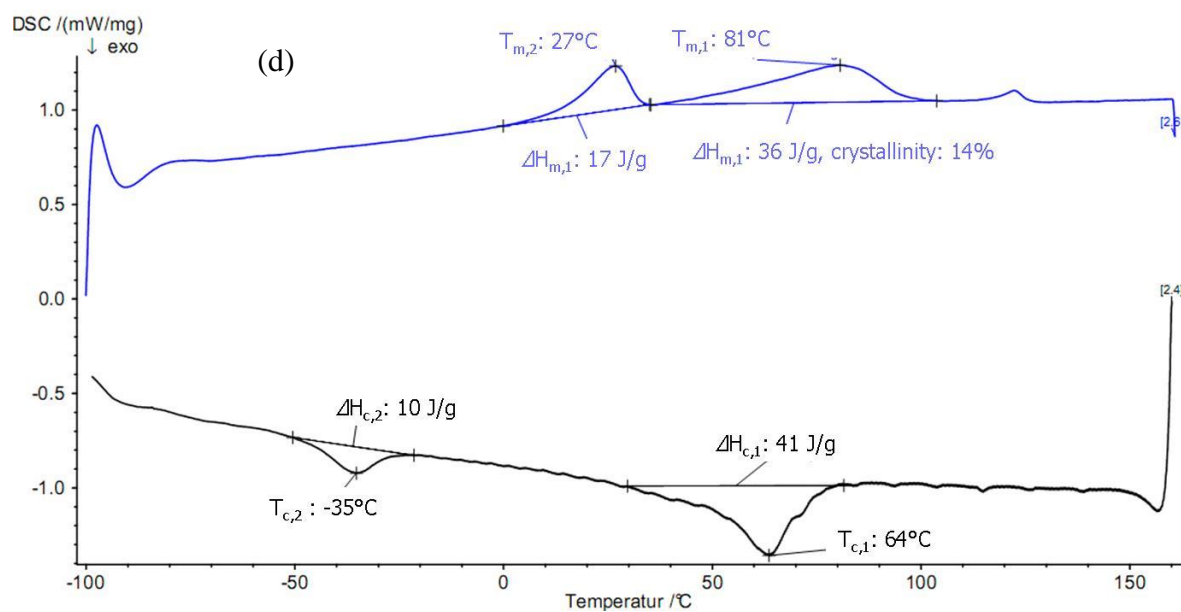


Figure S12. DSC traces of isolated copolymers from entry 1 (a), entry 2 (b), entry 3 (c) and entry 4 (d).

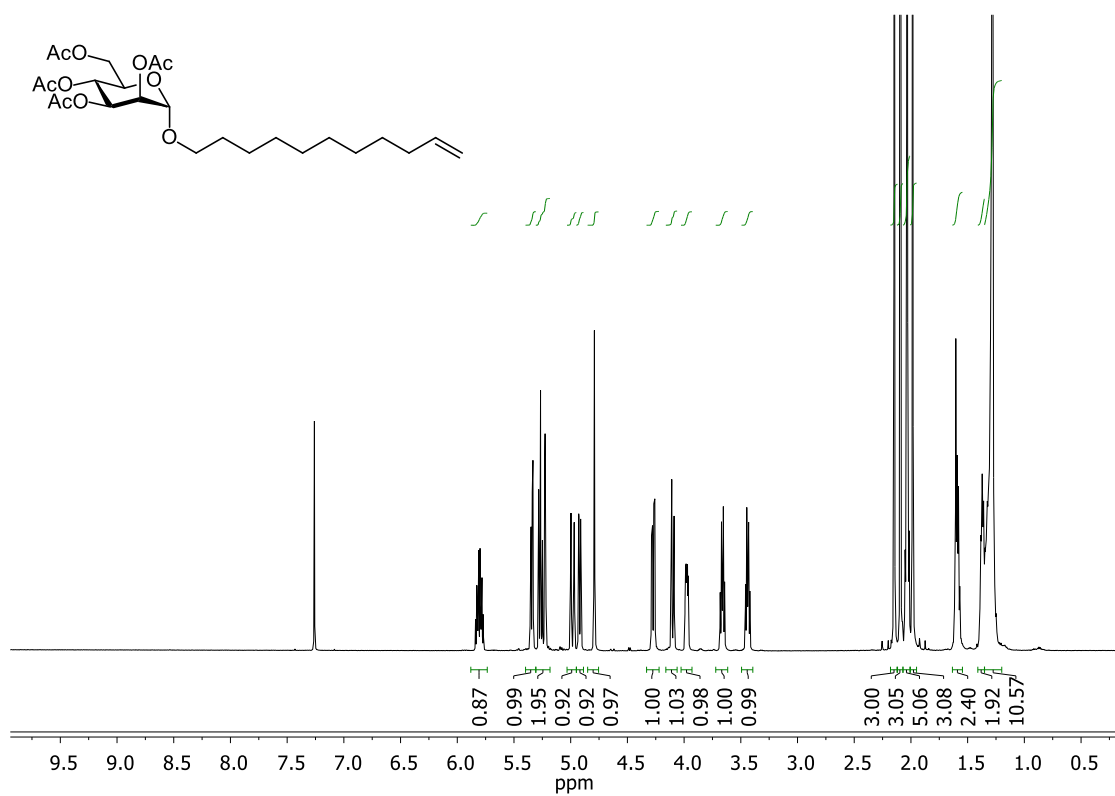


Figure S13. ¹H NMR spectrum (600.1 MHz, CDCl₃, 298 K) of compound 4.

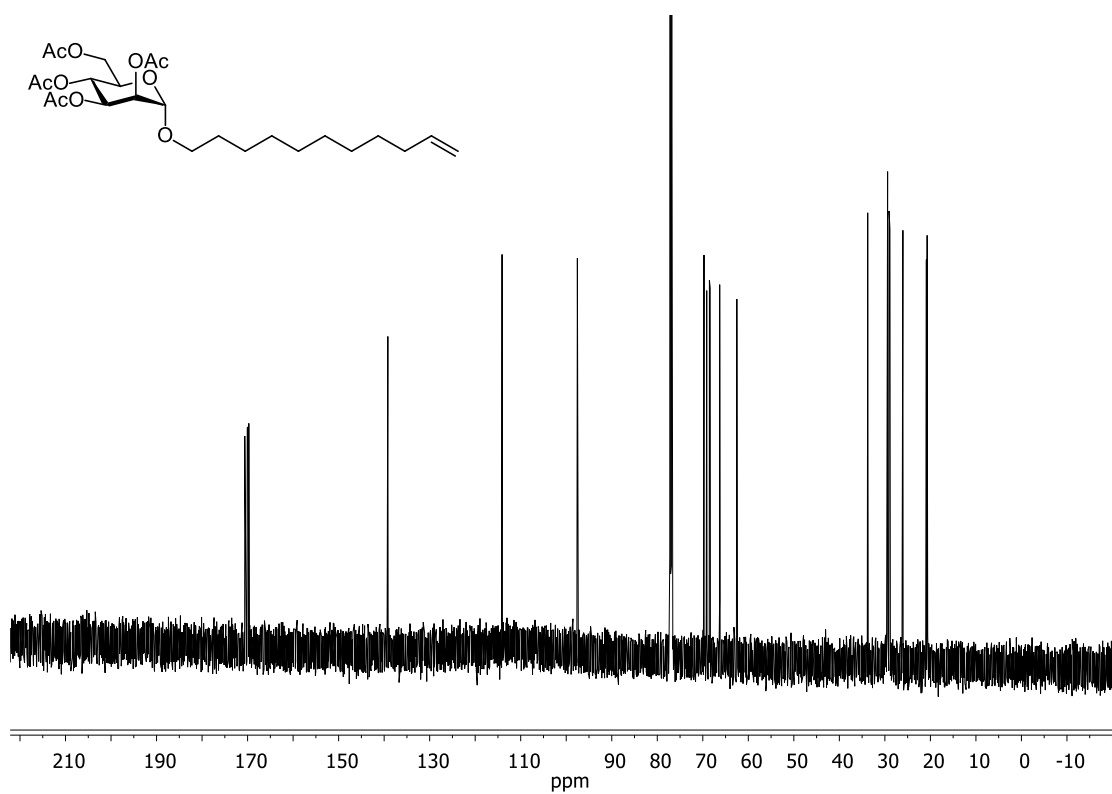


Figure S14. ¹³C NMR spectrum (150.9 MHz, CDCl₃, 298 K) of compound 4.

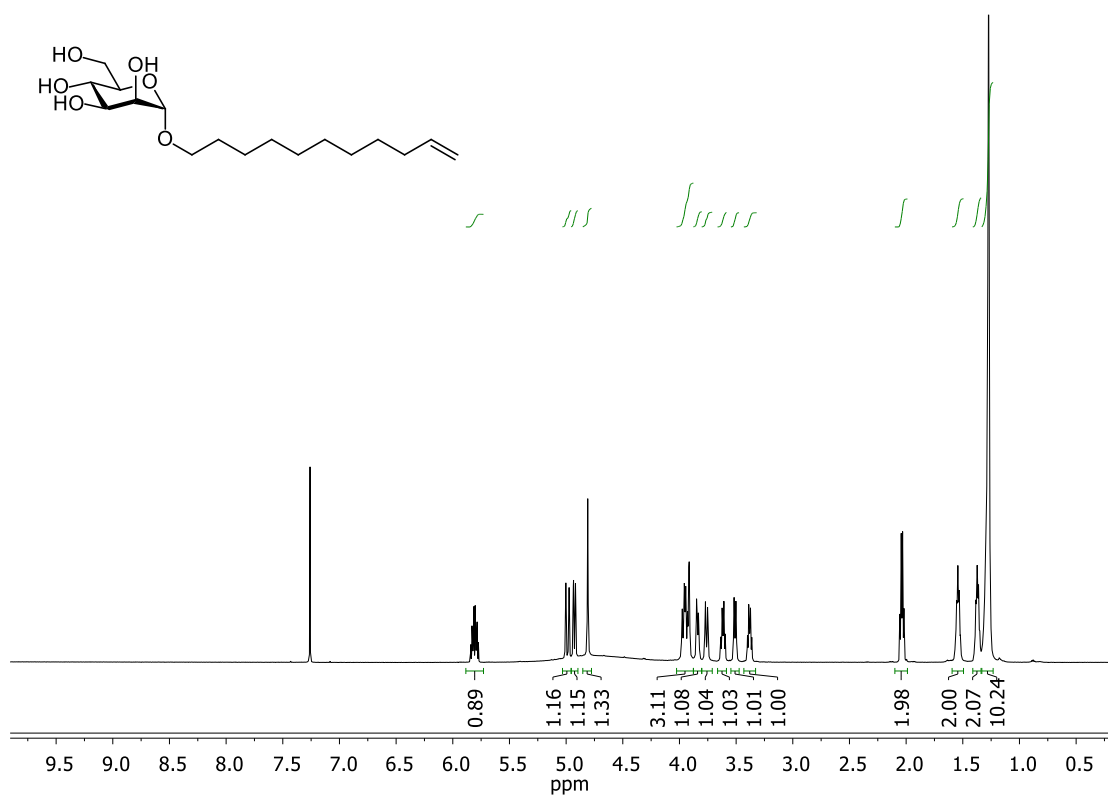


Figure S15. ¹H NMR spectrum (600.1 MHz, DMSO-*d*₆, 298 K) of comonomer **B2**.

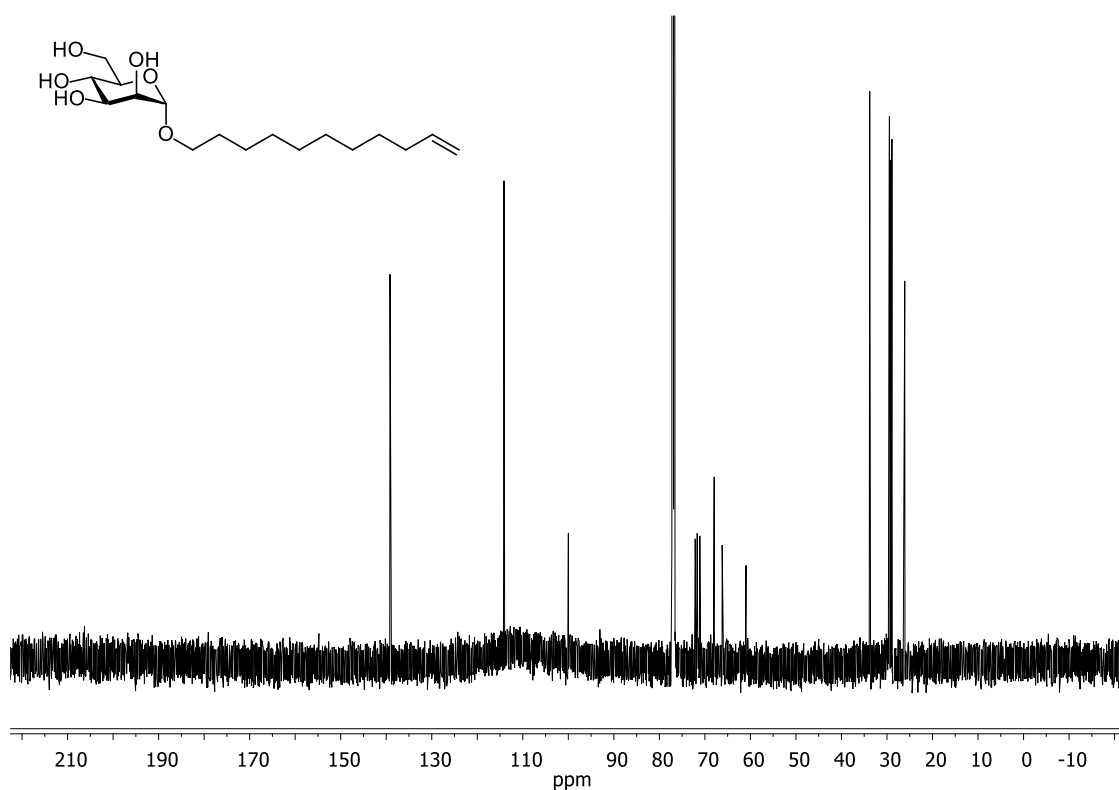


Figure S16. ¹³C NMR spectrum (150.9 MHz, DMSO-*d*₆, 298 K) of comonomer **B2**.

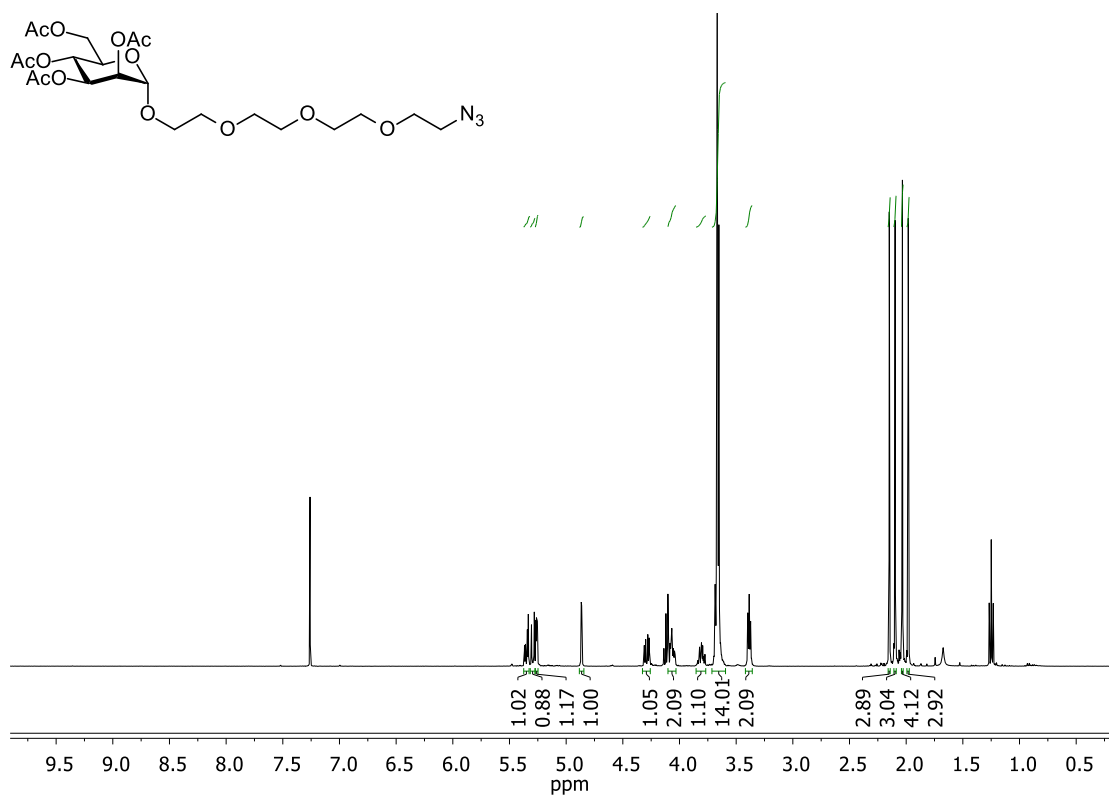


Figure S17. ¹H NMR spectrum (600.1 MHz, CDCl₃, 298 K) of compound 6.

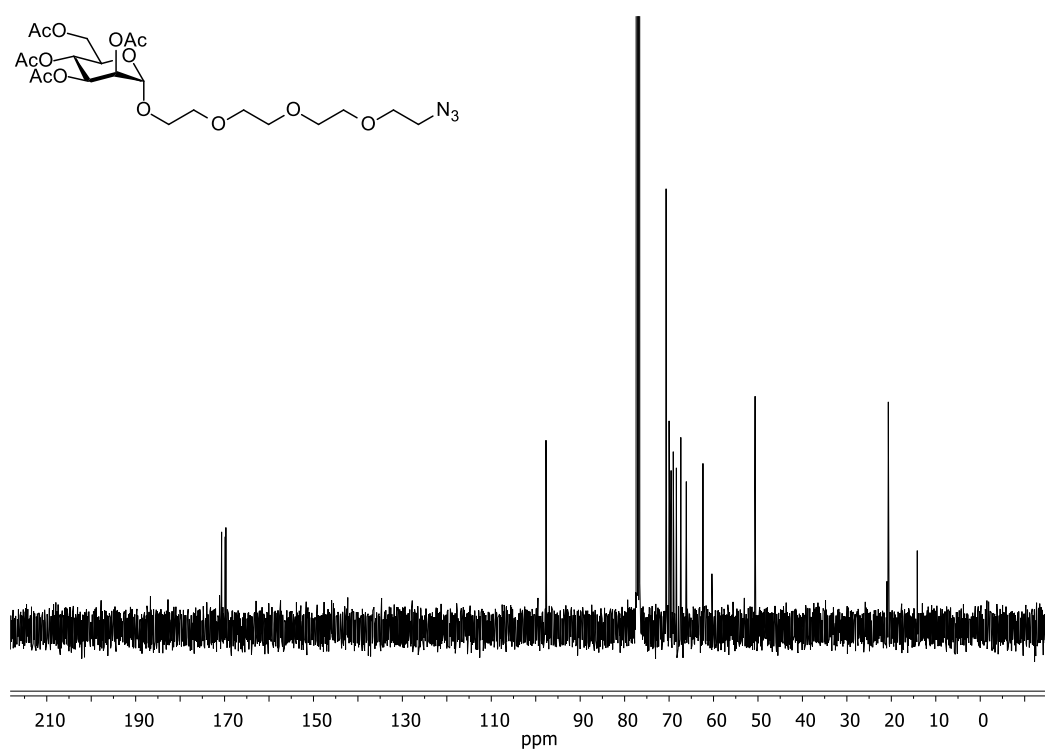


Figure S18. ¹³C NMR spectrum (150.9 MHz, CDCl₃, 298 K) of compound 6.

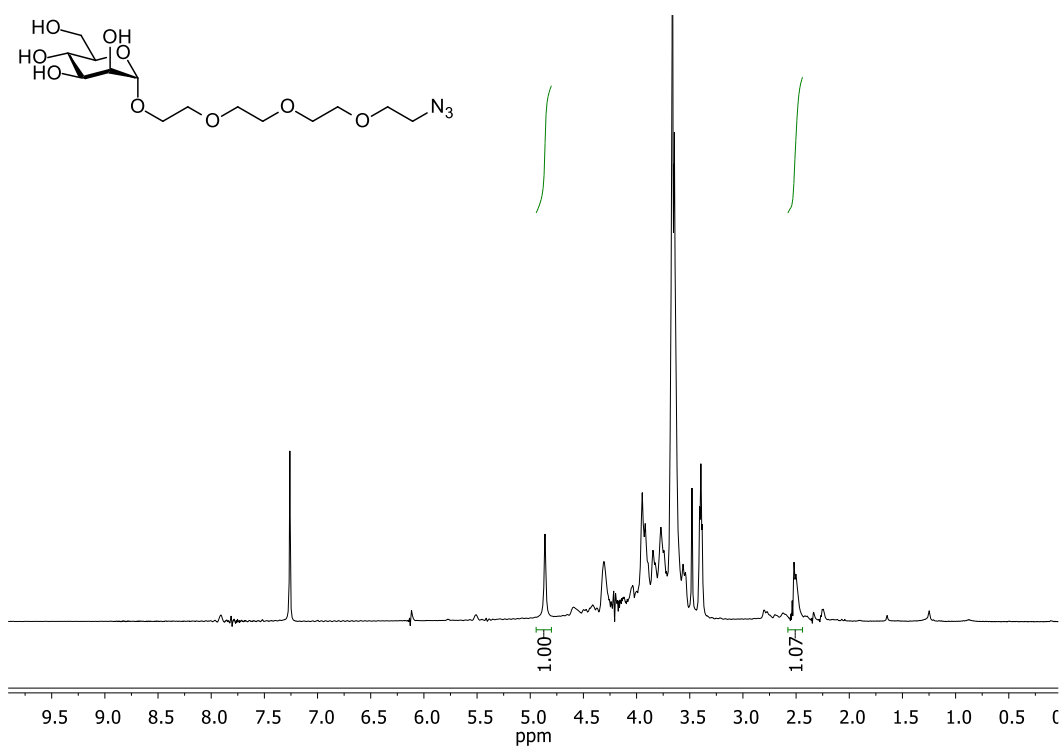


Figure S19. ^1H NMR spectrum (400.1 MHz, CDCl_3 , 298 K) of compound 7.

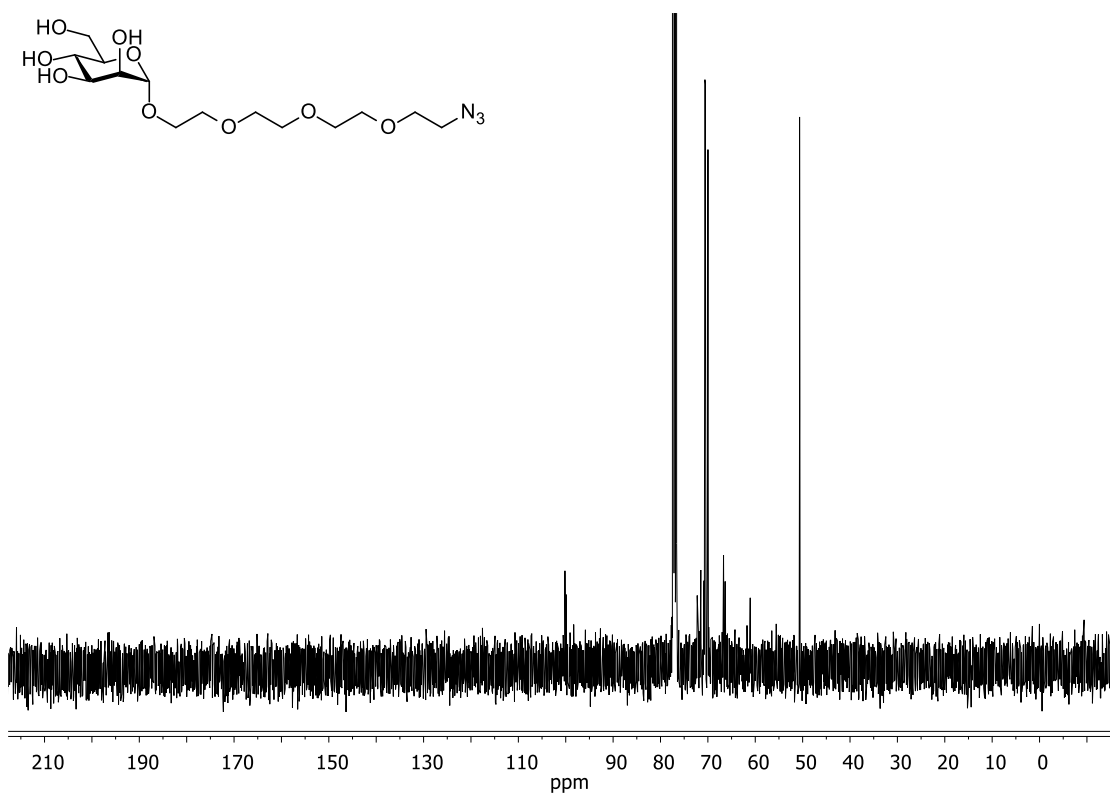


Figure S20. ^{13}C NMR spectrum (100.6 MHz, CDCl_3 , 298 K) of compound 7.

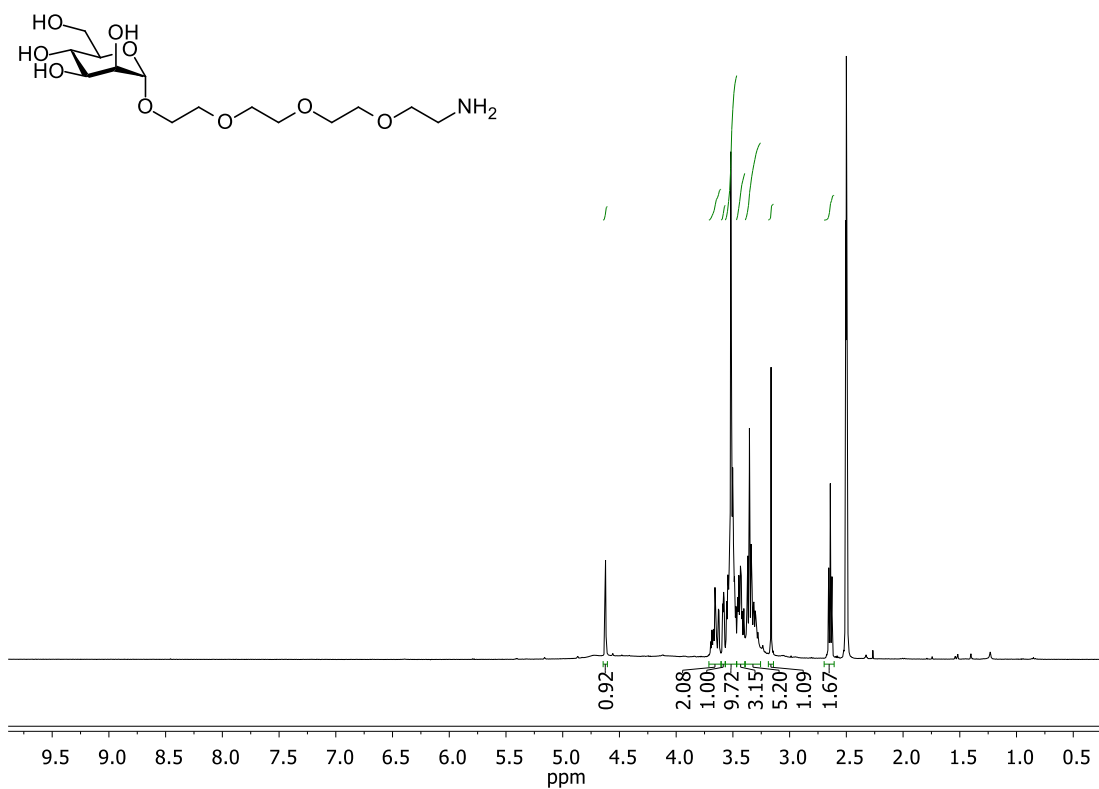


Figure S21. ¹H NMR spectrum (400.1 MHz, DMSO-*d*₆, 298 K) of compound **8**.

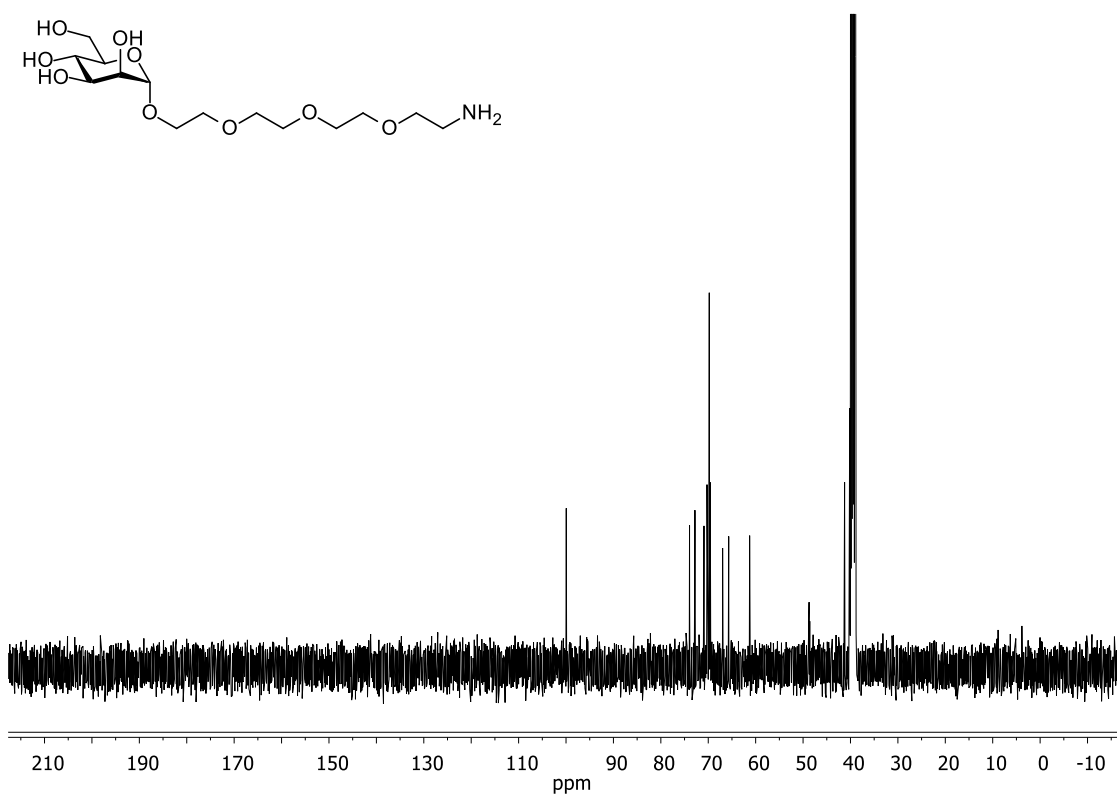


Figure S22. ¹³C NMR spectrum (100.6 MHz, DMSO-*d*₆, 298 K) of compound **8**.

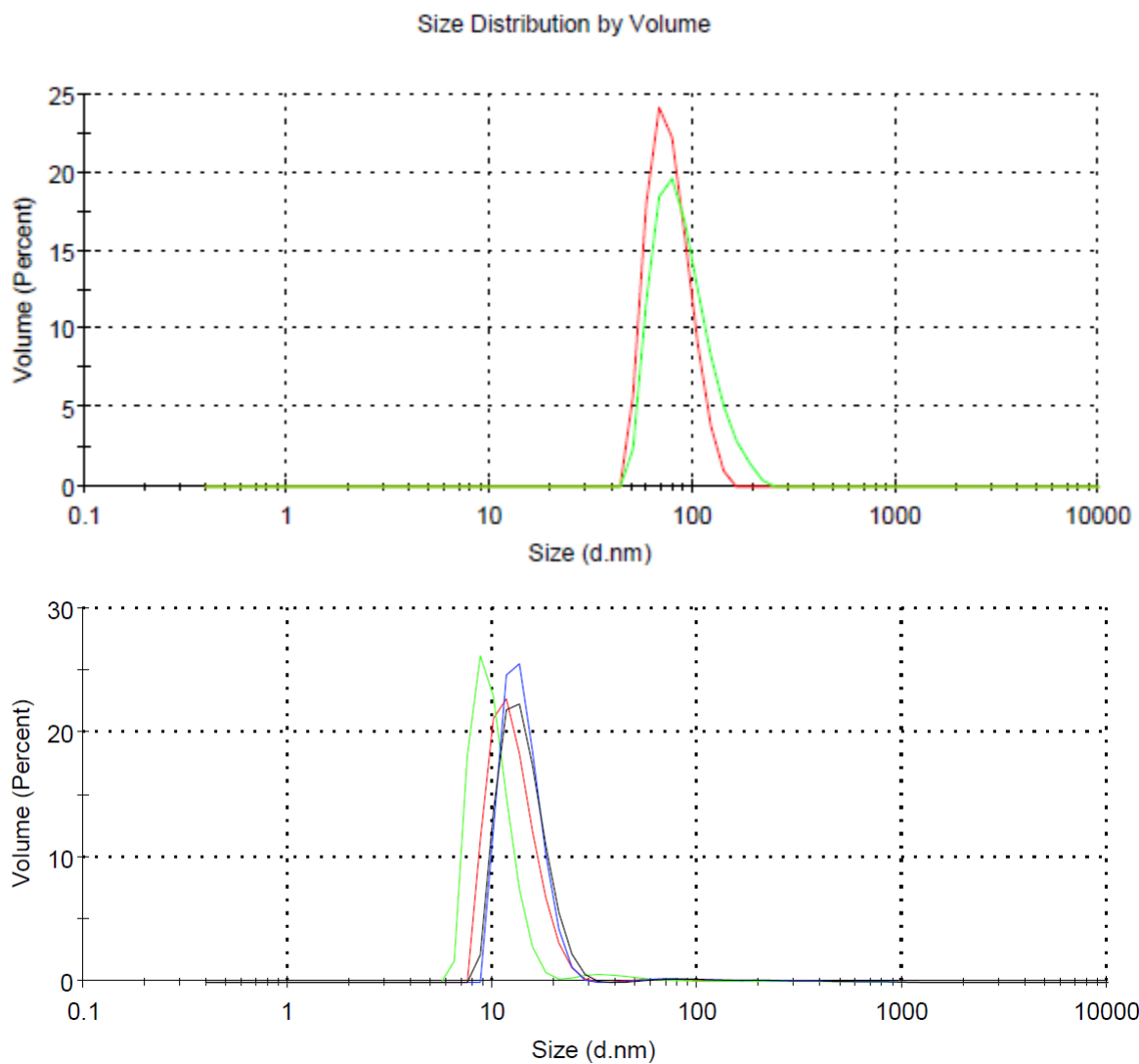


Figure S23. DLS traces of nanoparticle dispersions from Table 1, entry 4 (top) and entry 5 (bottom).