Electronic Supplementary Information

Elucidating the effect of sequence and degree of polymerization on antimicrobial properties for block copolymers

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Table S1. Polymer characterization data

Polymer	M_n (g/mol)[a]	*Đ*
1a	2600	1.09
1b	2450	1.13
2a	2650	1.15
2b	2630	1.09
3a	2370	1.10
3b	2630	1.11
4a	2460	1.10
4b	2750	1.07
5b	3340	1.09
6b	3290	1.09
7b	3990	1.08
8b	1910	1.13
9b	1700	1.11

[a]Measured relative to polystyrene standards.

Table S2. Antimicrobial results for polymers **1a**–**4a** and **1b**–**9b** in mmol/ml.

Polymer	*S. aureus*[a]	*E. coli*[a]	*K. pneumoniae*[a]	*A. baumanni*[a]	*P. aeruginosa*[a]	HEK293[b]
Gram +ve/–ve	+	–	–	–	–	
1a: C_2-MA_{12}-*b*-$Amine_6$	**>197**	**>197**	**>197**	**>197**	**>197**	**>98**
2a: C_2-$Amine_6$-*b*-MA_{12}	**>193**	**97**	**193**	**97**	**193**	**>97**
3a: C_2-MA_6-*b*-$Amine_6$-*b*-MA_6	**>216**	**108**	**216**	**108**	**54**	**>108**
4a: C_2-$Amine_3$-*b*-MA_{12}-*b*-$Amine_3$	**>208**	**52**	**104**	**26**	**104**	**>104**
1b: C_{12}-MA_{12}-*b*-$Amine_6$	**>209**	**52**	**>209**	**52**	**104**	**>104**
2b: C_{12}-$Amine_6$-*b*-MA_{12}	**97**	**12**	**24**	**12**	**49**	**29-45**
3b: C_{12}-MA_6-*b*-$Amine_6$-*b*-MA_6	**195**	**24**	**195**	**49**	**97**	**63-97**
4b: C_{12}-$Amine_3$-*b*-MA_{12}-*b*-$Amine_3$	**93**	**3**	**23**	**3**	**23**	**10-18**
5b: C_{12}-$Amine_1$-*b*-MA_{12}-*b*-$Amine_1$	**>153**	**38-77**	**77-153**	**38-77**	**>153**	**33-75**
6b: C_{12}-$Amine_2$-*b*-MA_{12}-*b*-$Amine_2$	**>156**	**19**	**39**	**19-39**	**78-156**	**17-38**
7b: C_{12}-$Amine_6$-*b*-MA_{12}-*b*-$Amine_6$	**64**	**16**	**16**	**16**	**16**	**24-30**
8b: C_{12}-$Amine_3$-*b*-MA_6-*b*-$Amine_3$	**8**	**8-4**	**17-8**	**8-4**	**8**	**46-103**
9b: C_{12}-$Amine_3$-*b*-MA_3-*b*-$Amine_3$	**9**	**9**	**38-19**	**19-9**	**19-9**	**83-135**

[a]Minimum inhibitory concentration listed in mmol/mL. [b]CC_{50} listed in mmol/mL

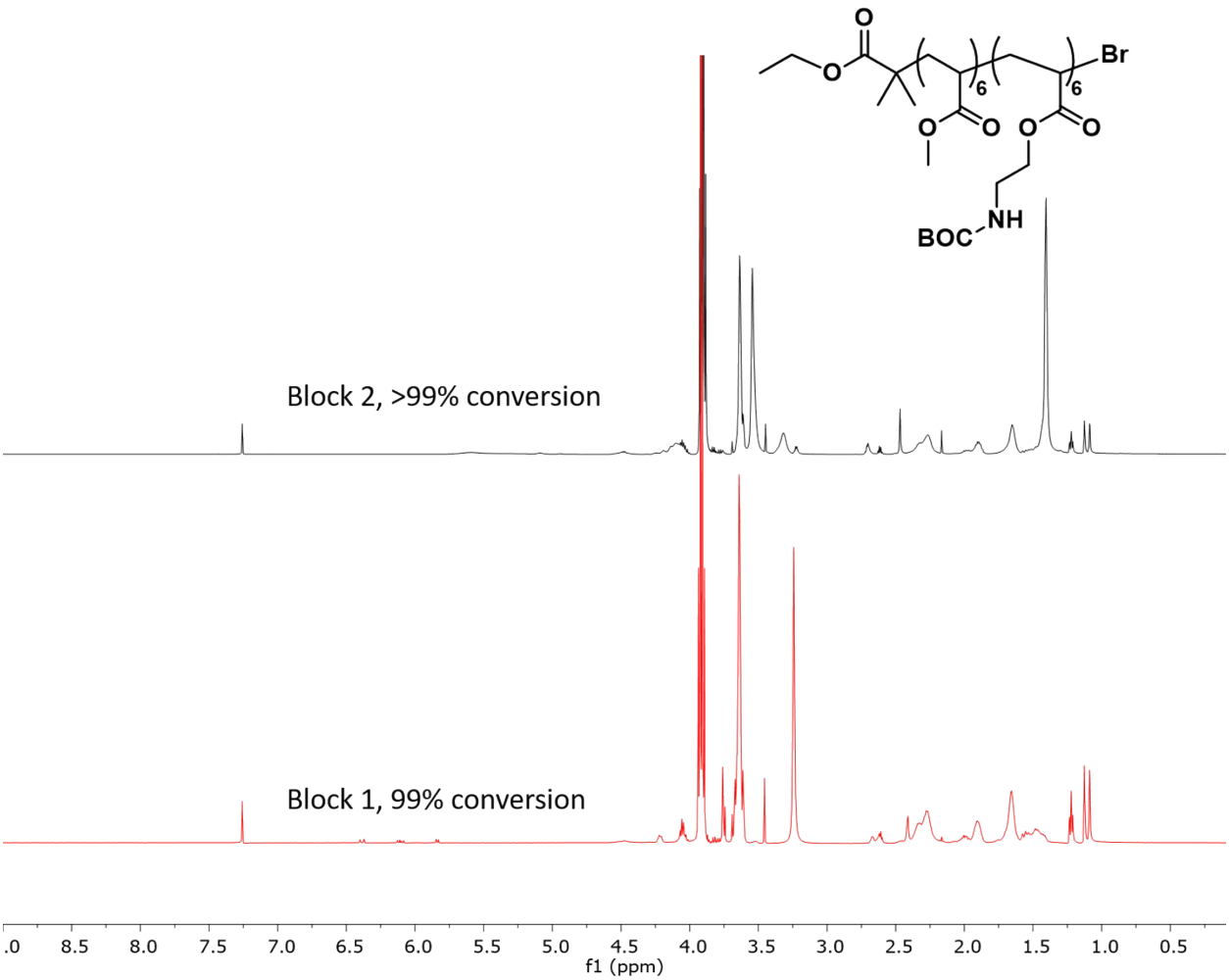

Figure S1. ^{1}H NMR spectrum of **1a** [EBiB-$MA_{12}Am_6$] block 1 in $CDCl_3$ showing high conversion throughout all monomer additions.

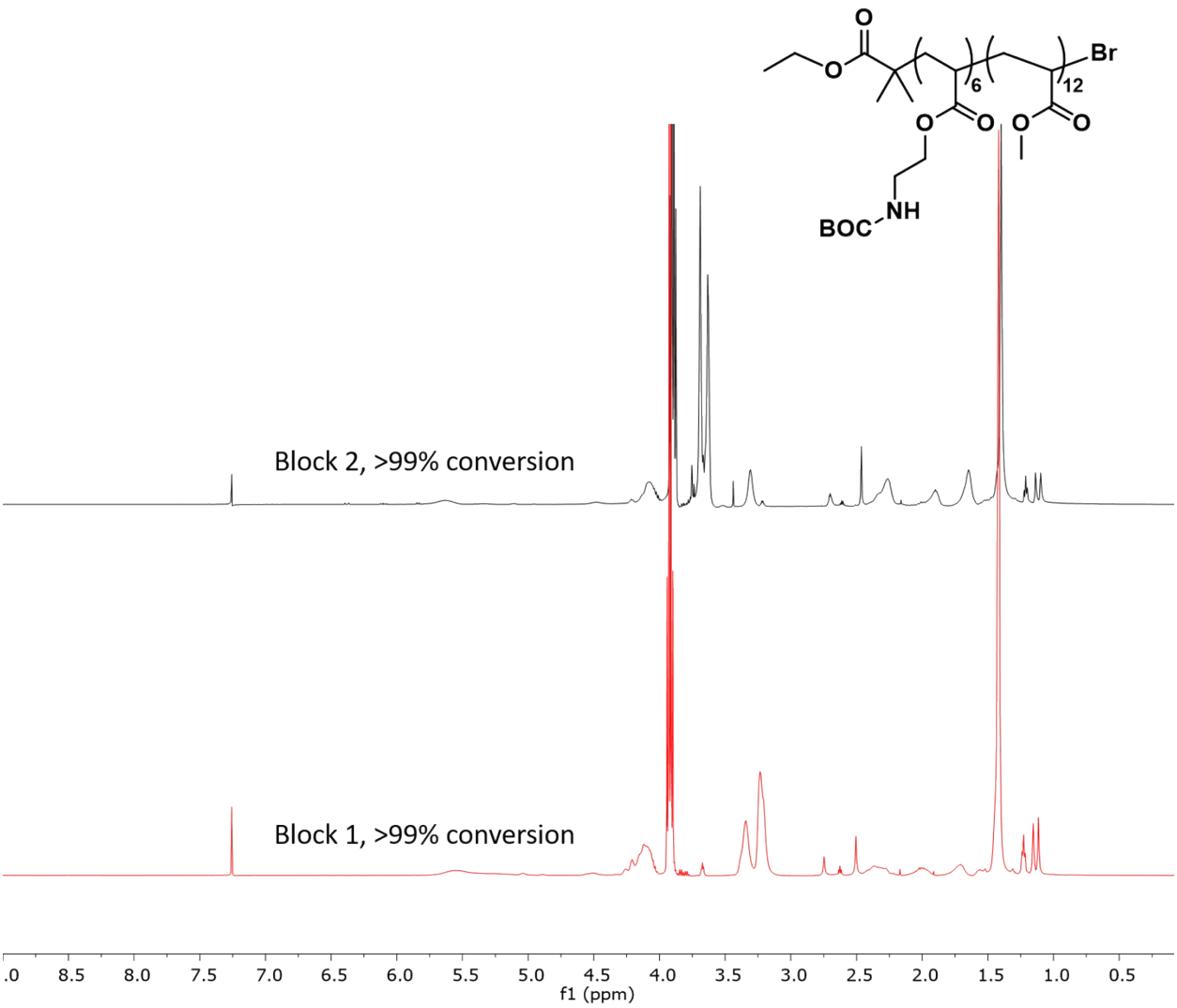

Figure S2. ^{1}H NMR spectrum of **2a** [EBiB-Am$_6$MA$_{12}$] block 1 in $CDCl_3$ showing high conversion throughout all monomer additions.

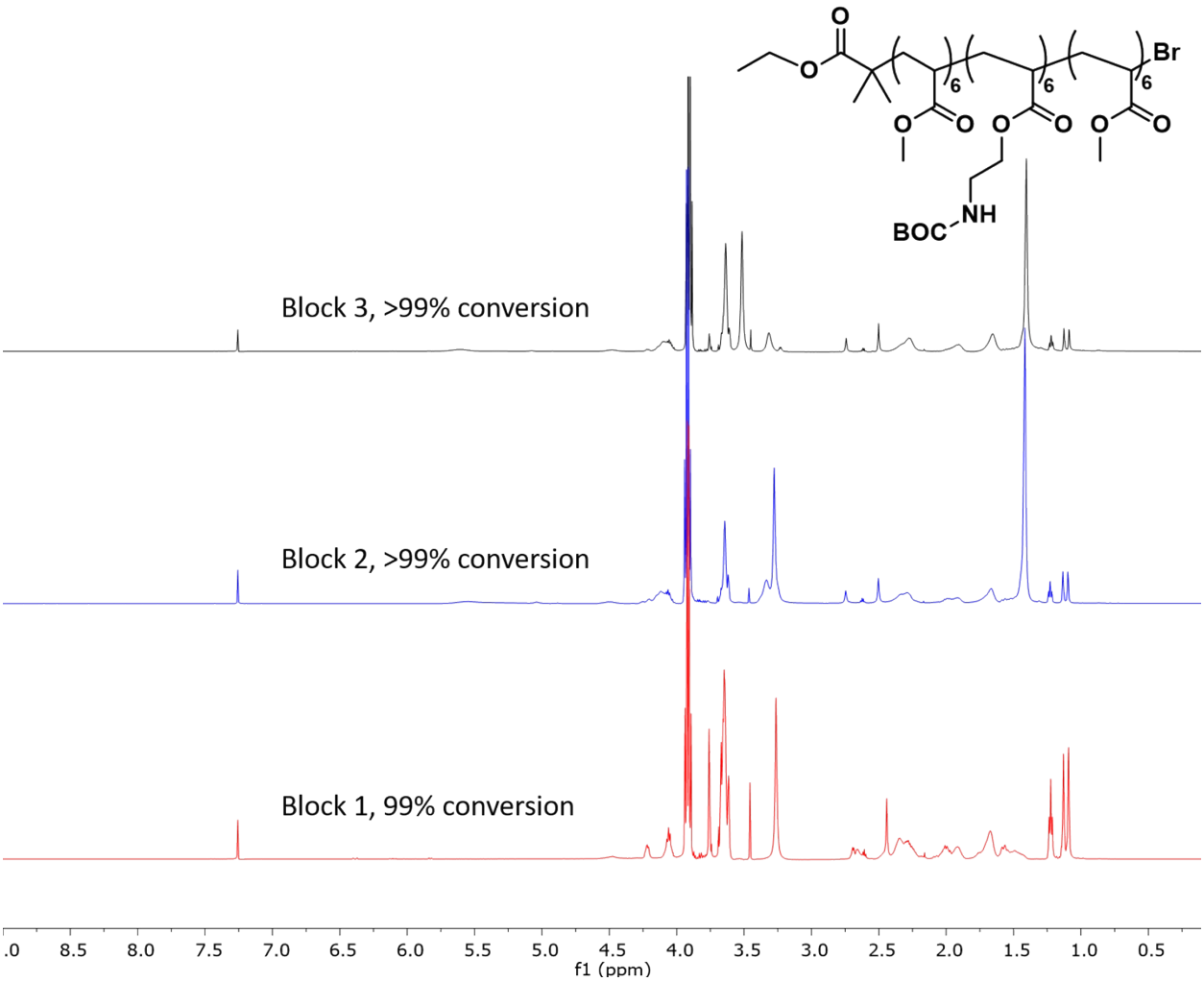

Figure S3. ^{1}H NMR spectrum of **3a** [EBiB-$MA_6Am_6MA_6$] block 1 in $CDCl_3$ showing high conversion throughout all monomer additions.

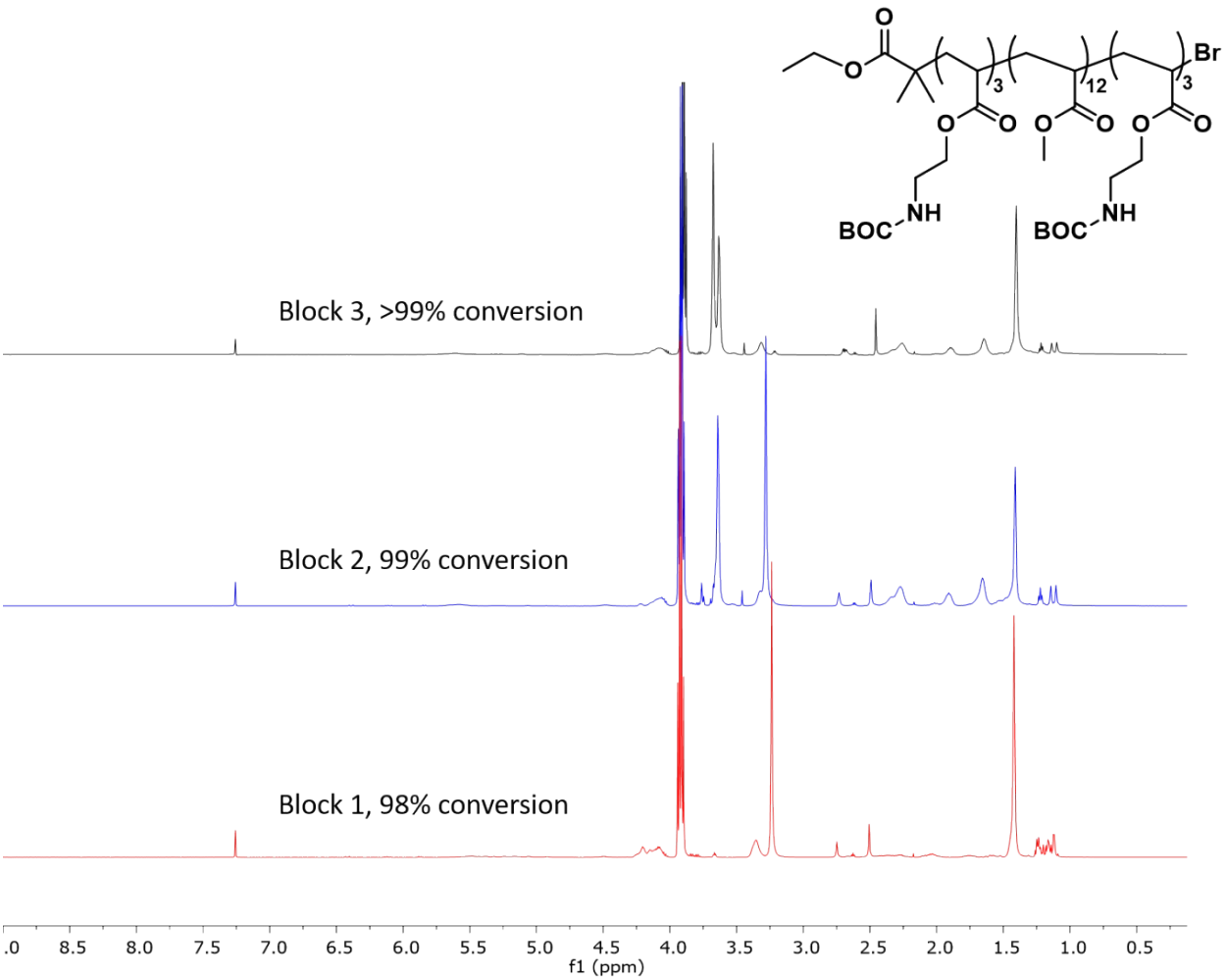

Figure S4. ^{1}H NMR spectrum of **4a** [EBiB-$Am_3MA_{12}Am_3$] block 1 in $CDCl_3$ showing high conversion throughout all monomer additions.

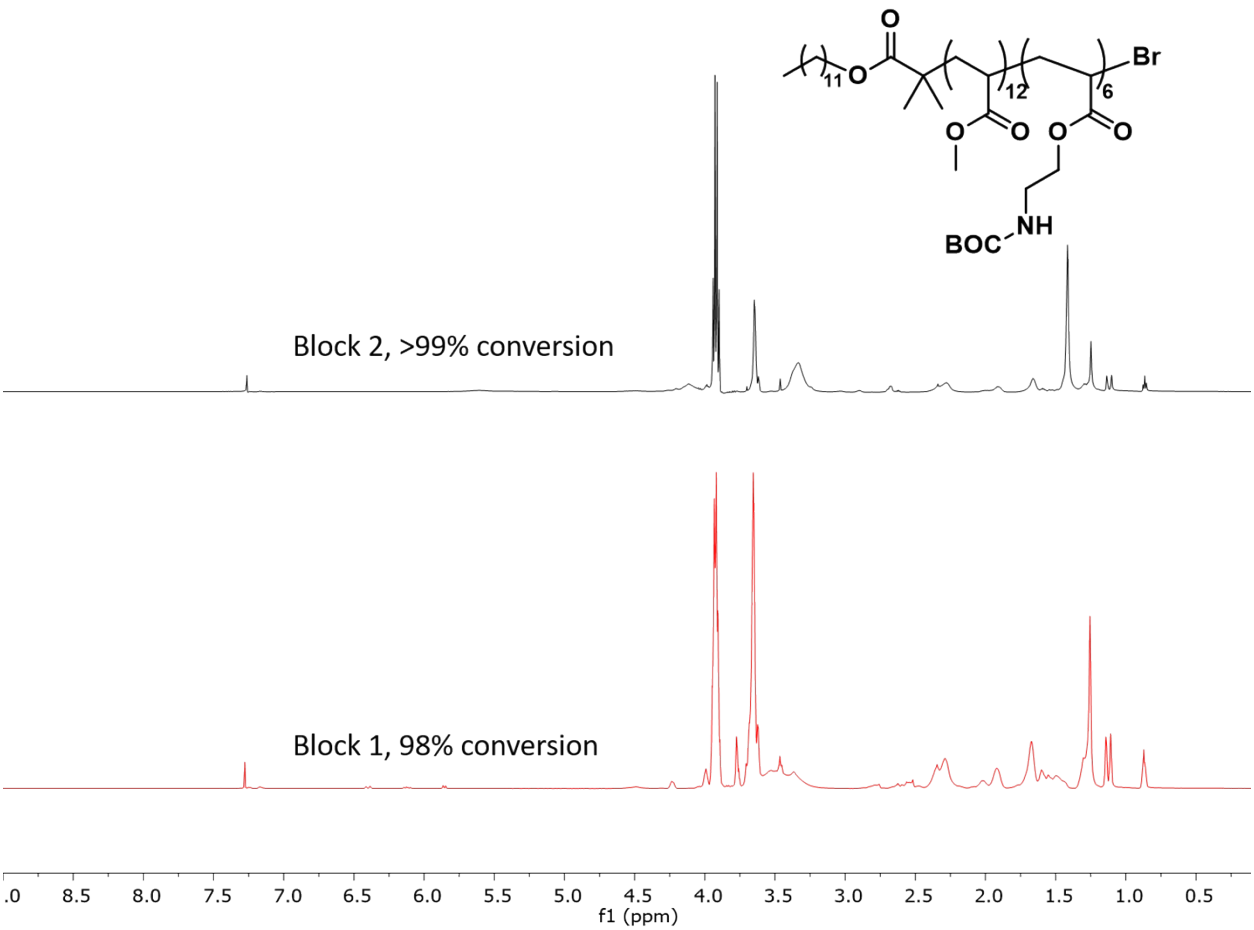

Figure S5. ^{1}H NMR spectrum of **1b** [DBiB-$MA_{12}Am_6$] block 1 in $CDCl_3$ showing high conversion throughout all monomer additions.

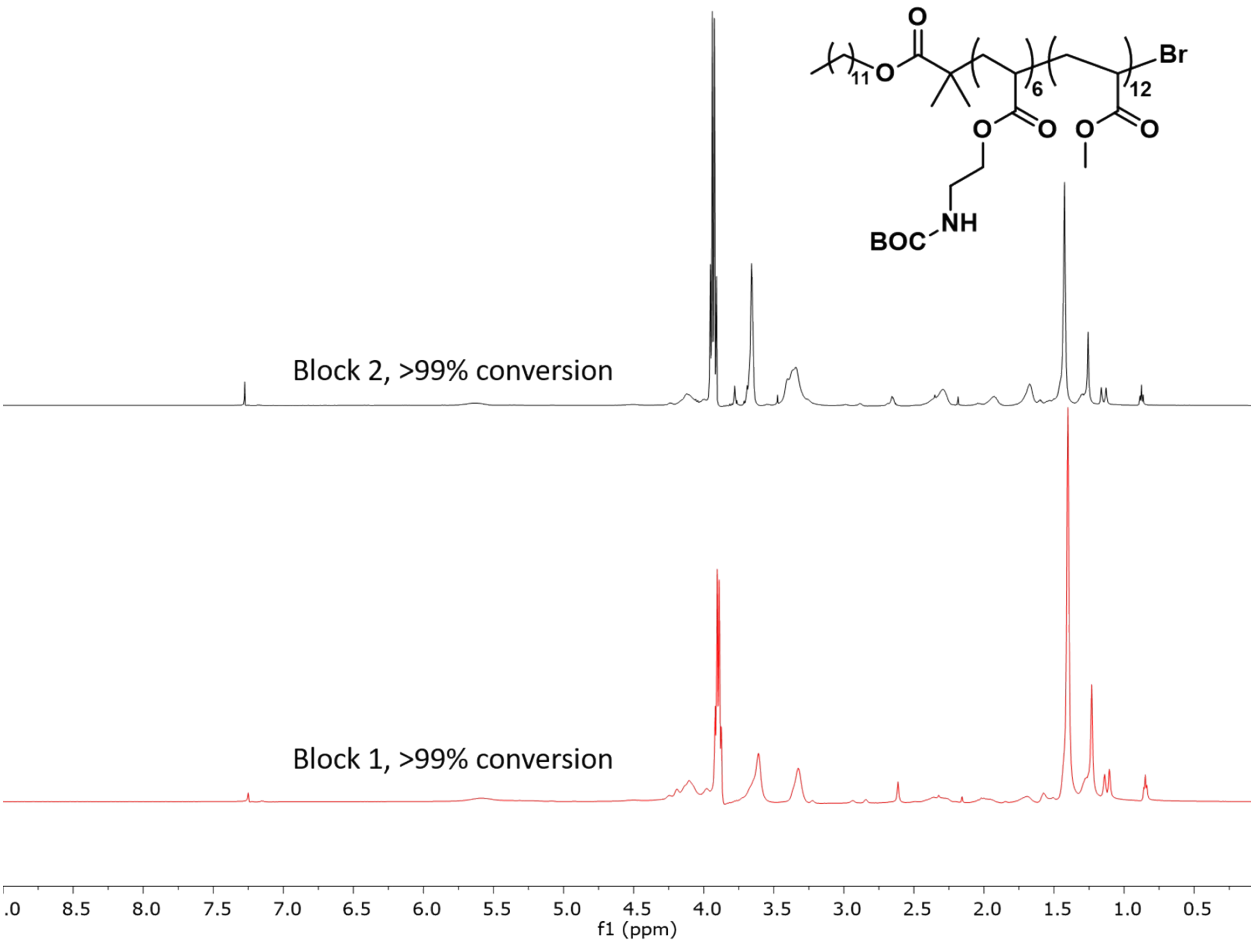

Figure S6. ^{1}H NMR spectrum of **2b** [DBiB-Am$_6$MA$_{12}$] block 1 in $CDCl_3$ showing high conversion throughout all monomer additions.

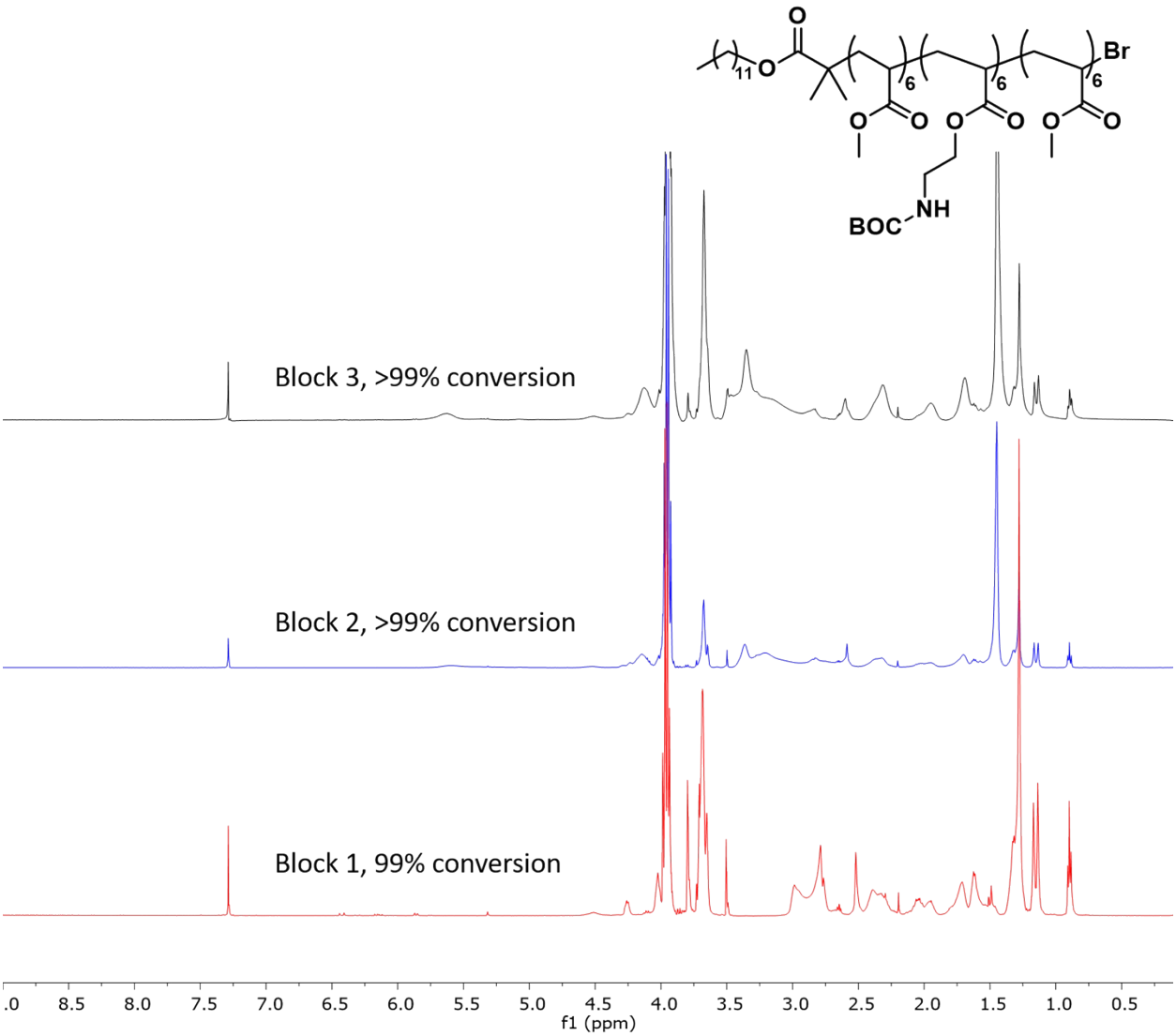

Figure S7. ^{1}H NMR spectrum of **3b** [DBiB-$MA_6Am_6MA_6$] block 1 in $CDCl_3$ showing high conversion throughout all monomer additions.

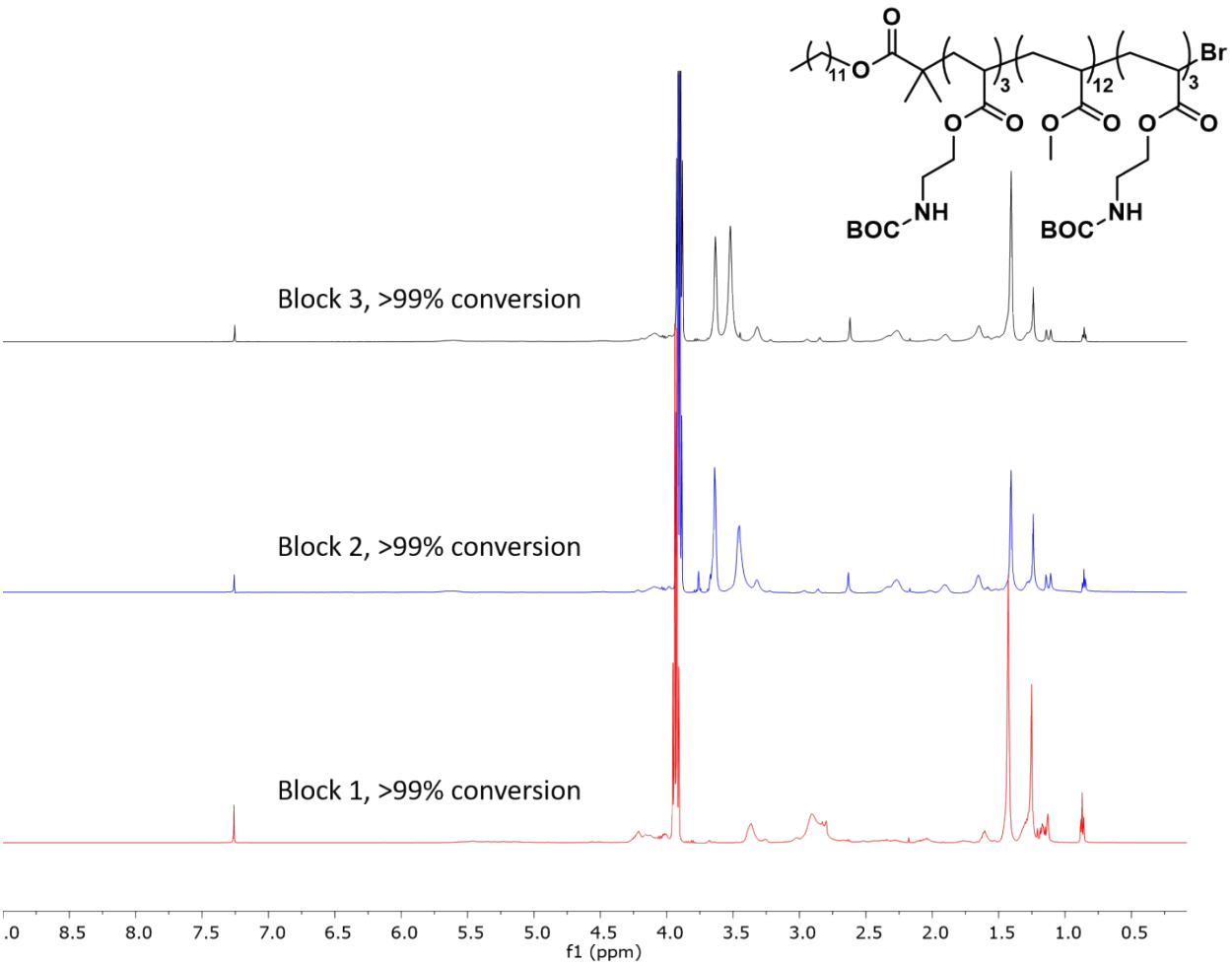

Figure S8. ^{1}H NMR spectrum of **4b** [DBiB-Am$_3$MA$_{12}$Am$_3$] block 1 in $CDCl_3$ showing high conversion throughout all monomer additions.

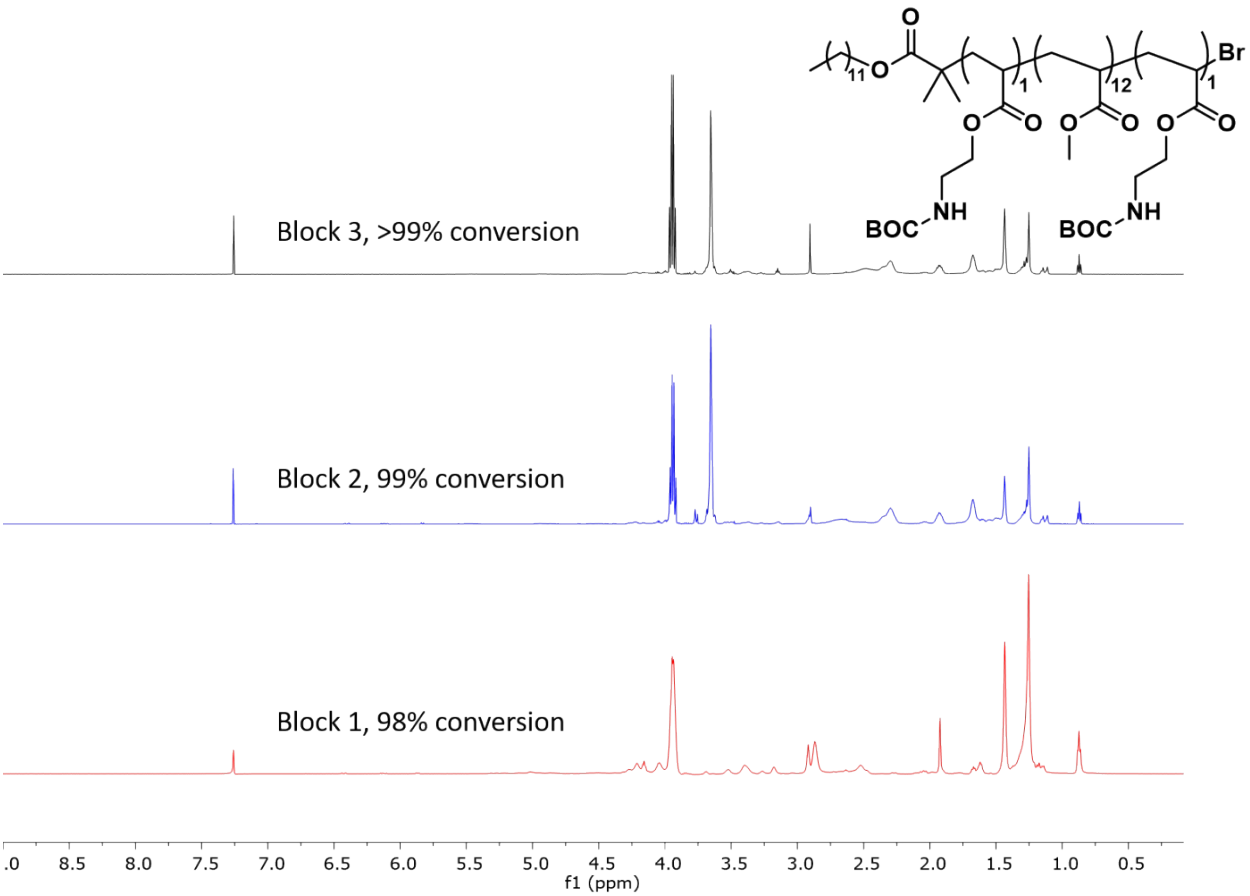

Figure S9. ^{1}H NMR spectrum of **5b** [DBiB-Am$_1$MA$_{12}$Am$_1$] block 1 in $CDCl_3$ showing high conversion throughout all monomer additions.

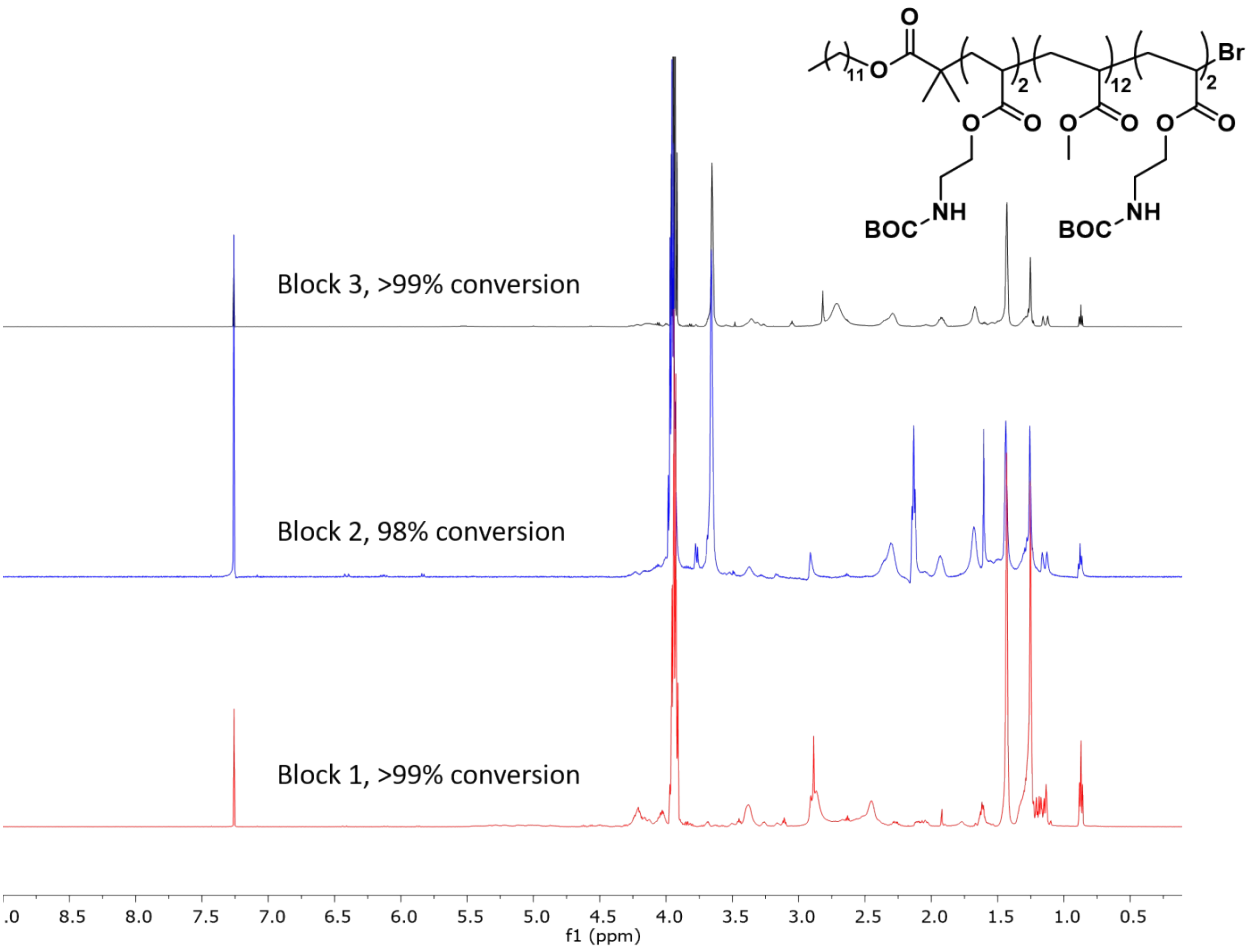

Figure S10. ^{1}H NMR spectrum of **6b** [DBiB-Am$_2$MA$_{12}$Am$_2$] block 1 in $CDCl_3$ showing high conversion throughout all monomer additions.

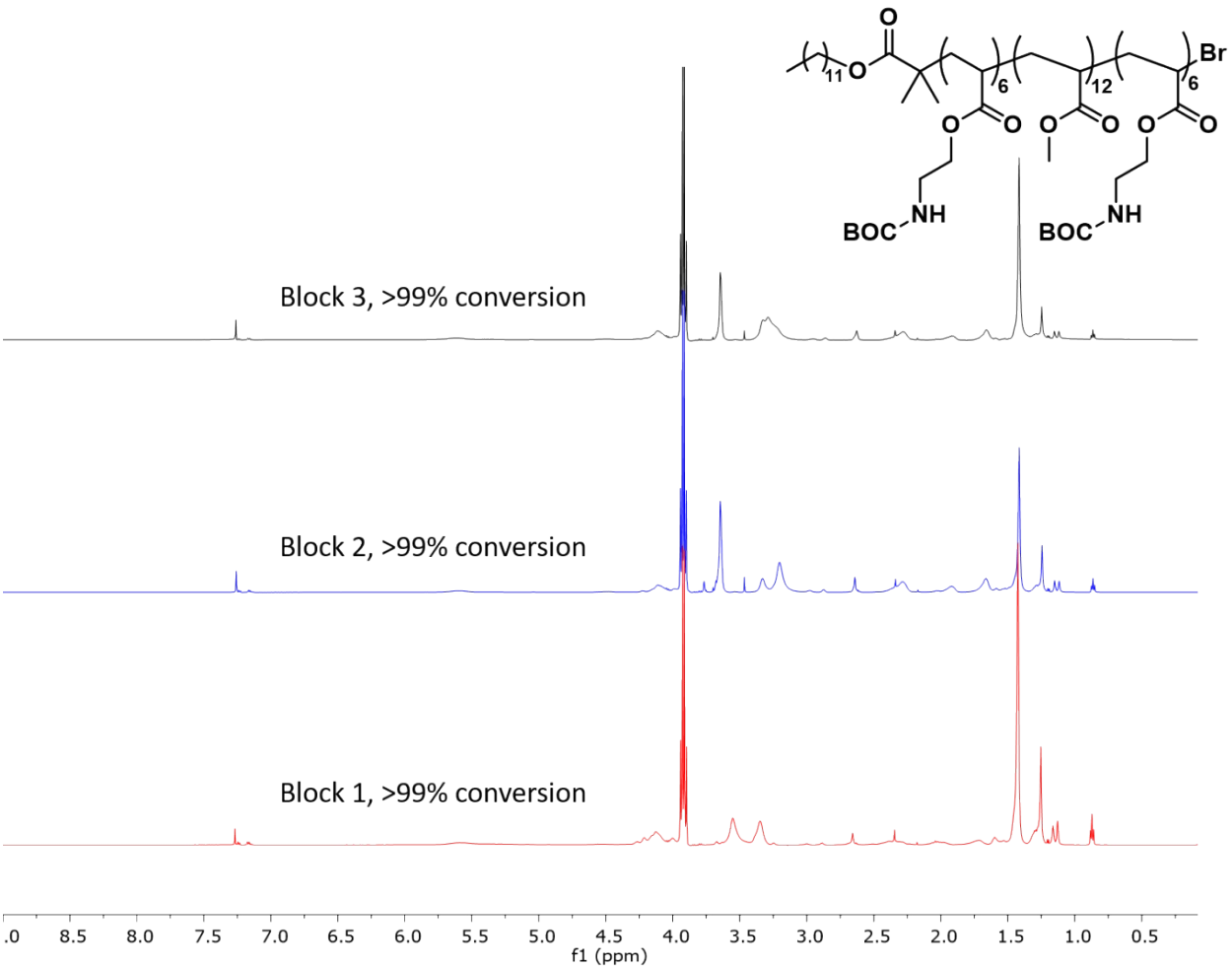

Figure S11. ^{1}H NMR spectrum of **7b** [DBiB-$Am_6MA_{12}Am_6$] block 1 in $CDCl_3$ showing high conversion throughout all monomer additions.

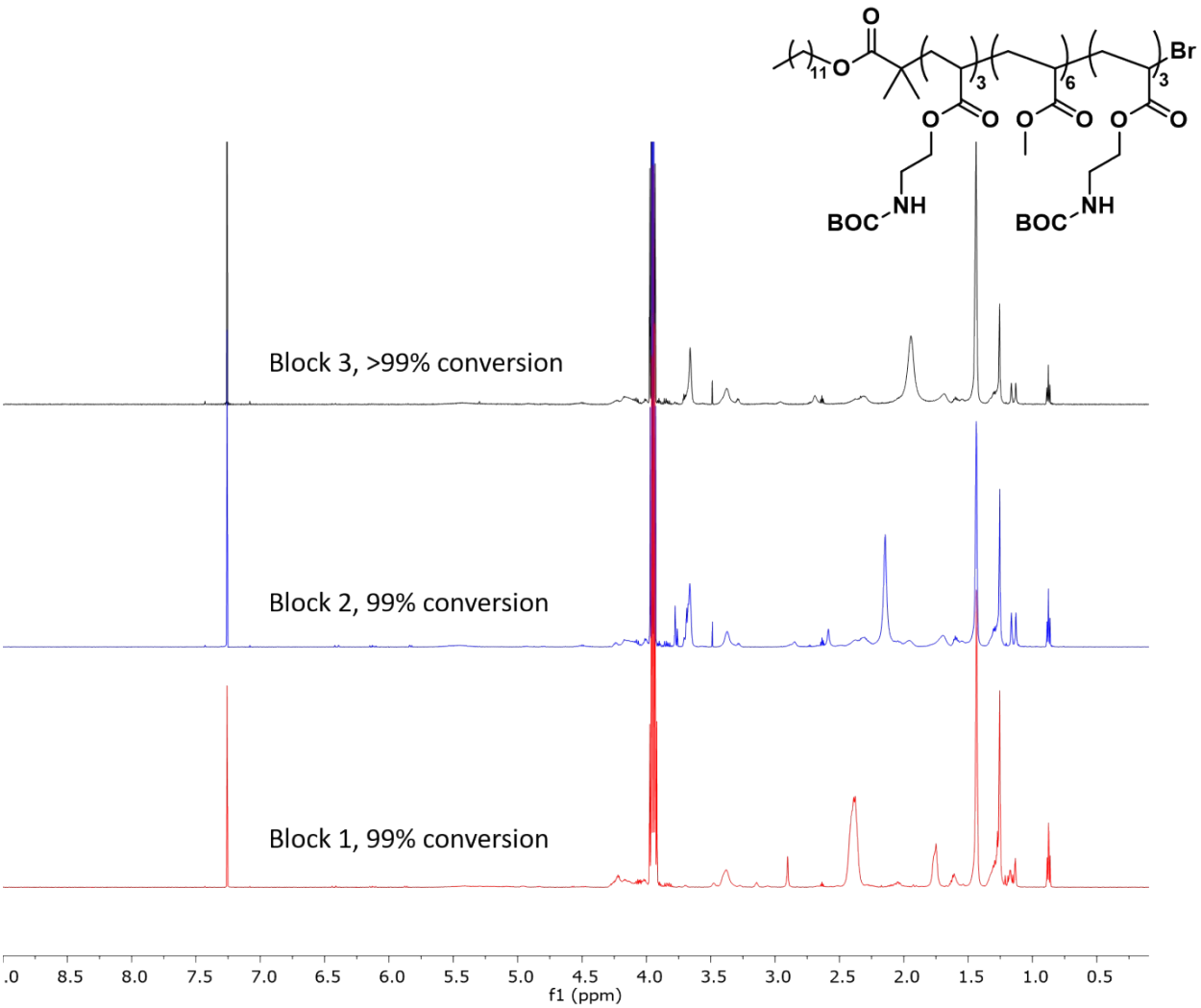

Figure S12. ^{1}H NMR spectrum of **8b** [DBiB-Am$_3$MA$_3$Am$_3$] block 1 in $CDCl_3$ showing high conversion throughout all monomer additions.

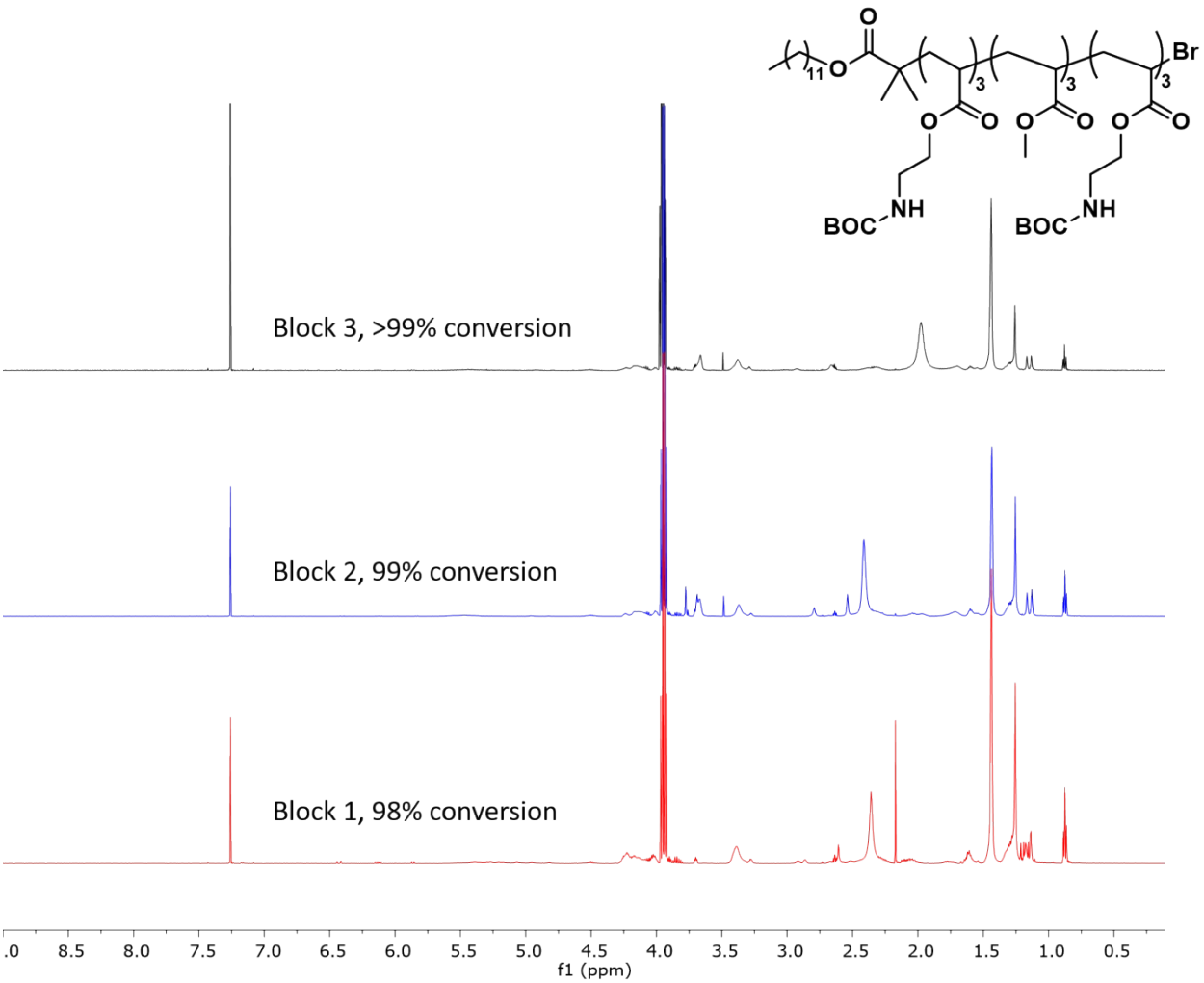

Figure S13. ^{1}H NMR spectrum of **9b** [DBiB-$Am_3MA_6Am_3$] block 1 in $CDCl_3$ showing high conversion throughout all monomer additions.

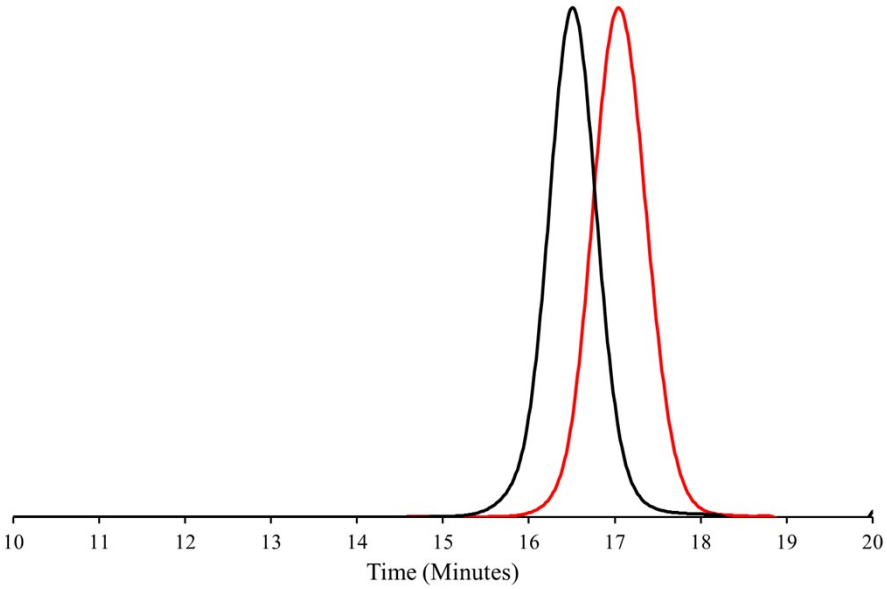

Figure S14. SEC traces of **1a** [EBiB-$MA_{12}Am_6$] block 1 (red) and block 2 (black).

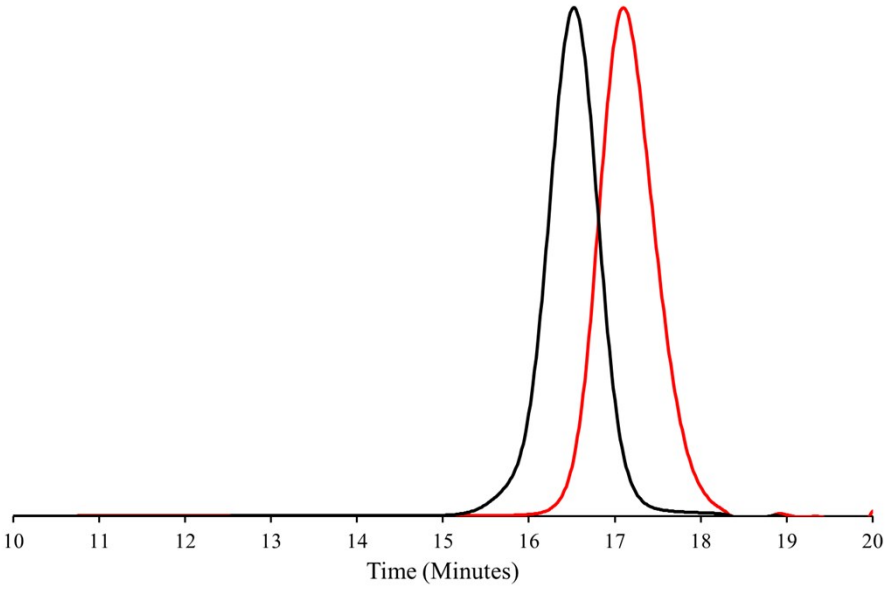

Figure S15. SEC traces of **2a** [EBiB-Am_6MA_{12}] block 1 (red) and block 2 (black).

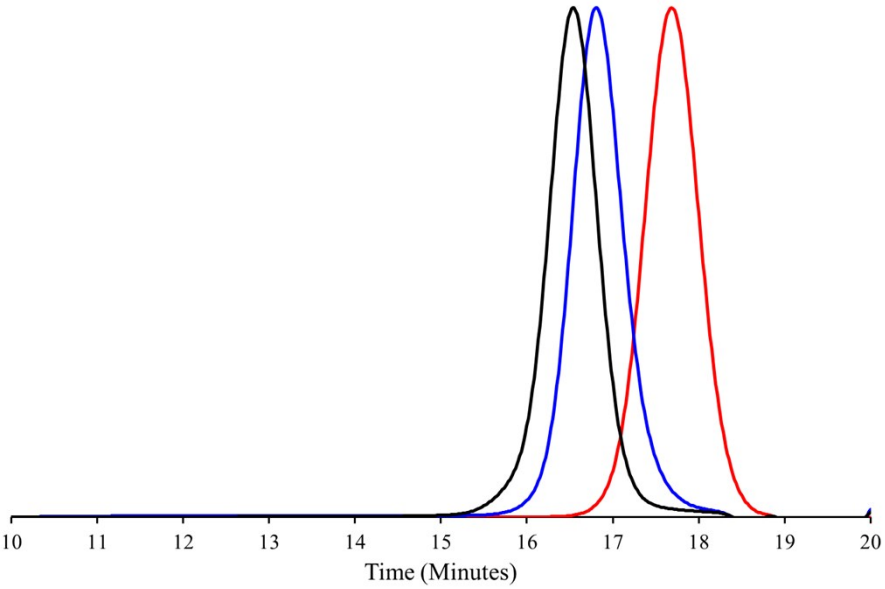

Figure S16. SEC traces of **3a** [EBiB-$MA_6Am_6MA_6$] block 1 (red), block 2 (blue) and block 3 (black).

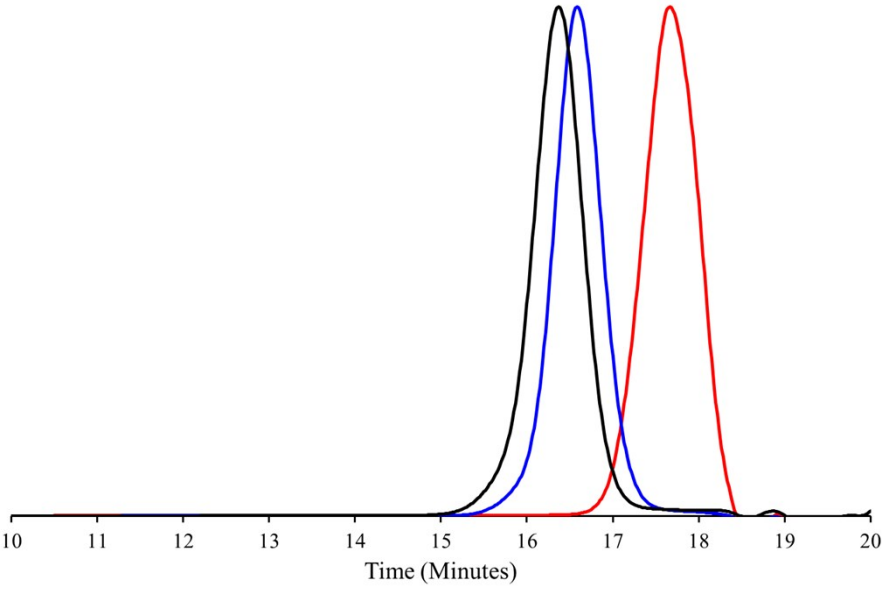

Figure S17. SEC traces of **4a** [EBiB-$Am_3MA_{12}Am_3$] block 1 (red), block 2 (blue) and block 3 (black).

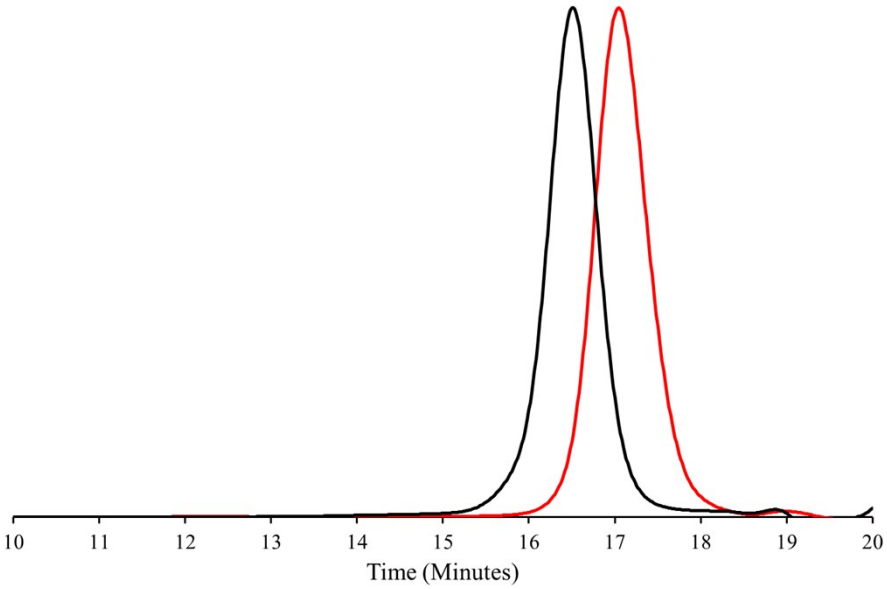

Figure S18. SEC traces of **1b** [DBiB-$MA_{12}Am_6$] block 1 (red) and block 2 (black).

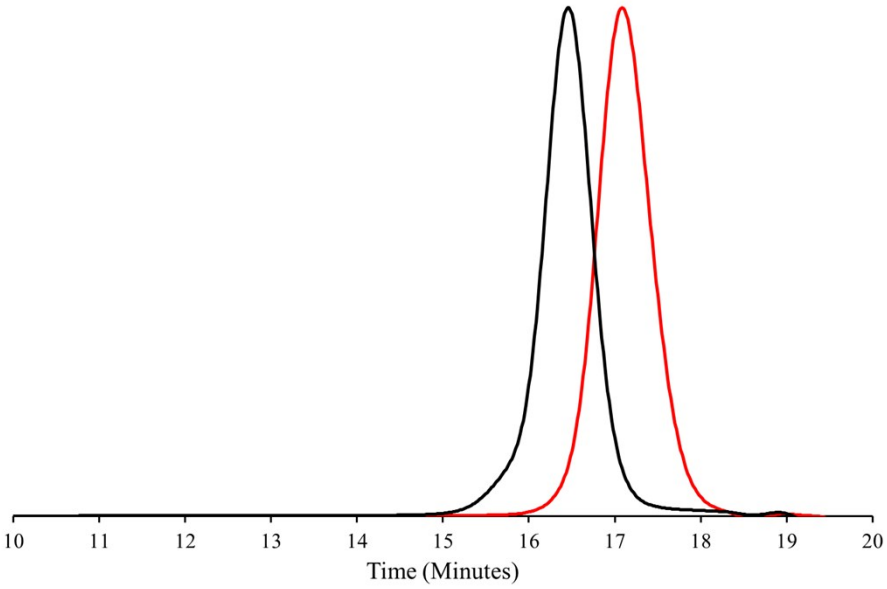

Figure S19. SEC traces of **2b** [DBiB-Am_6MA_{12}] block 1 (red) and block 2 (black).

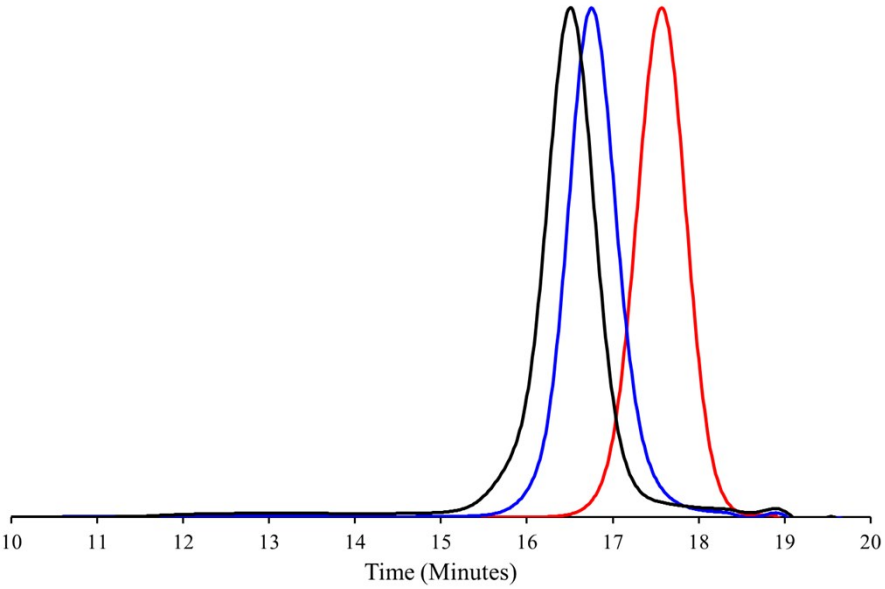

Figure S20. SEC traces of **3b** [DBiB-$MA_6Am_6MA_6$] block 1 (red), block 2 (blue) and block 3 (black).

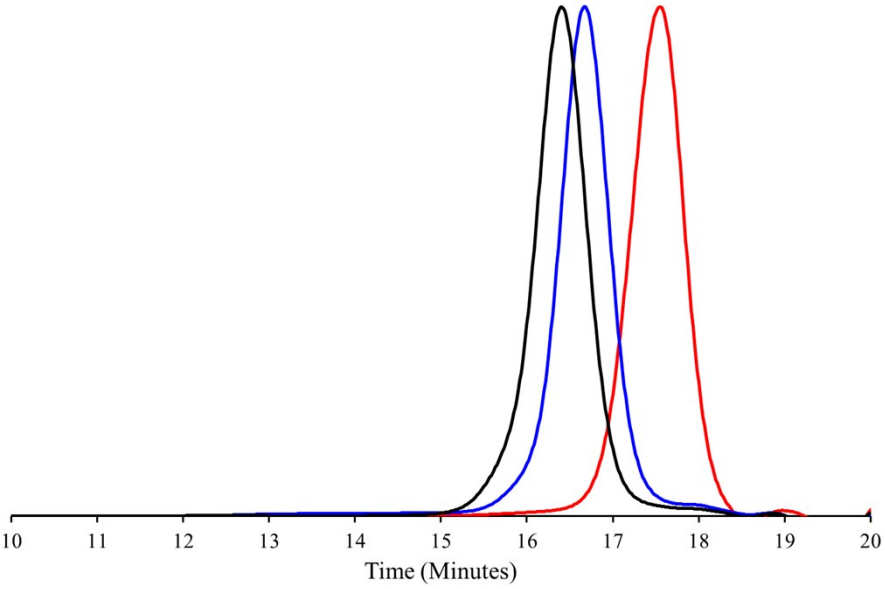

Figure S21. SEC traces of **4b** [DBiB-$Am_3MA_{12}Am_3$] block 1 (red), block 2 (blue) and block 3 (black).

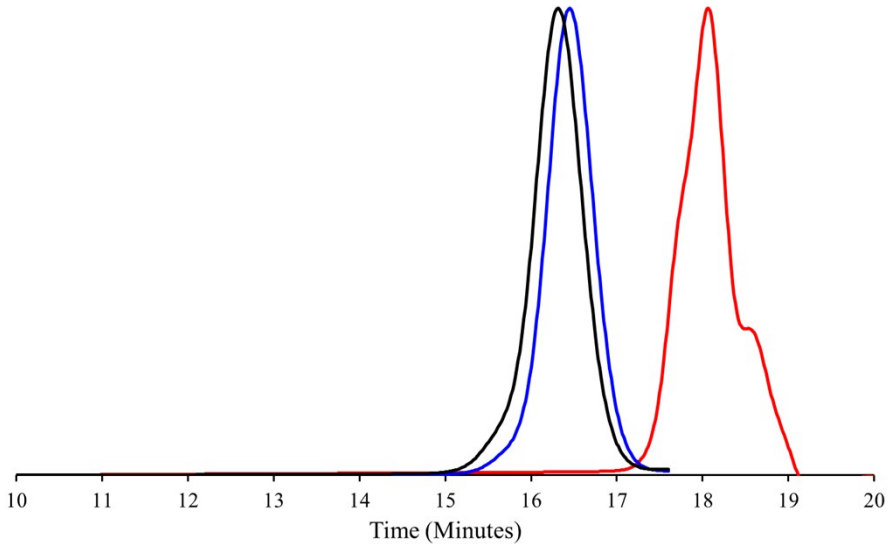

Figure S22. SEC traces of **5b** [DBiB-$Am_1MA_{12}Am_1$] block 1 (red), block 2 (blue) and block 3 (black).

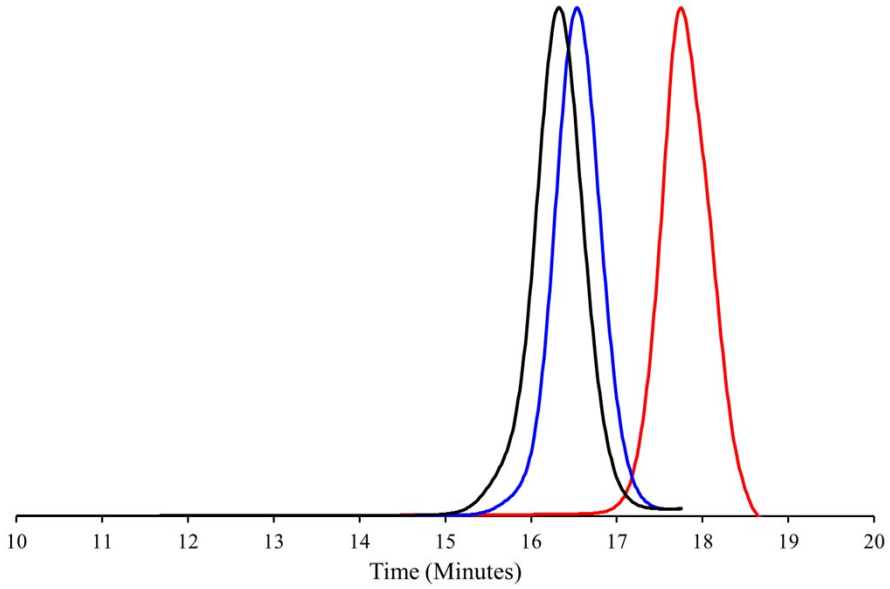

Figure S23. SEC traces of **6b** [DBiB-$Am_2MA_{12}Am_2$] block 1 (red), block 2 (blue) and block 3 (black).

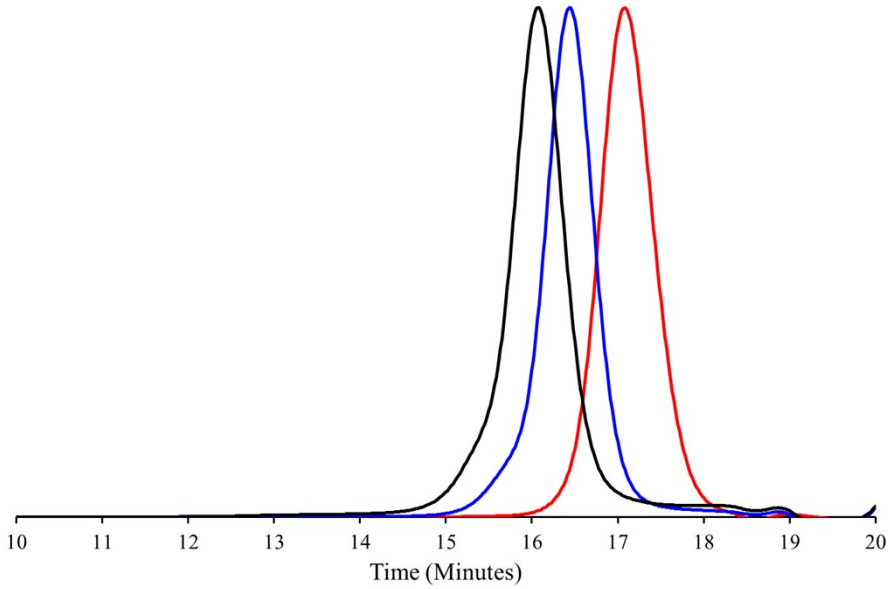

Figure S24. SEC traces of **7b** [DBiB-$Am_6MA_{12}Am_6$] block 1 (red), block 2 (blue) and block 3 (black).

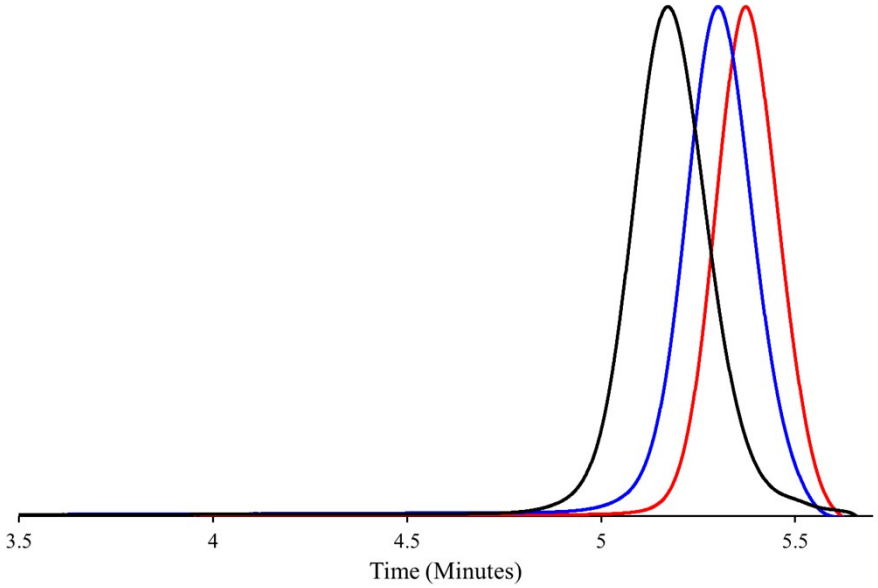

Figure S25. SEC traces of **8b** [DBiB-$Am_3MA_3Am_3$] block 1 (red), block 2 (blue) and block 3 (black).

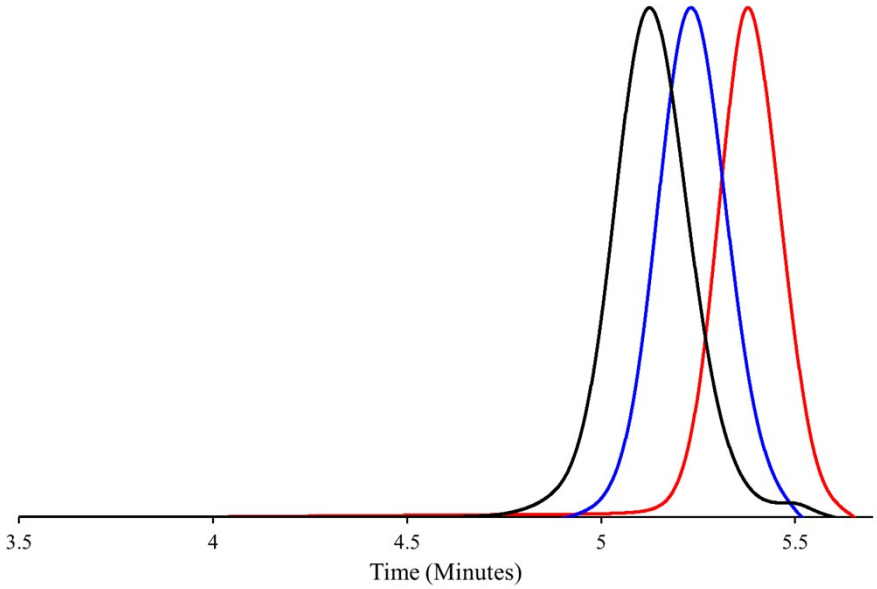

Figure S26. SEC traces of **9b** [DBiB-$Am_3MA_6Am_3$] block 1 (red), block 2 (blue) and block 3 (black).

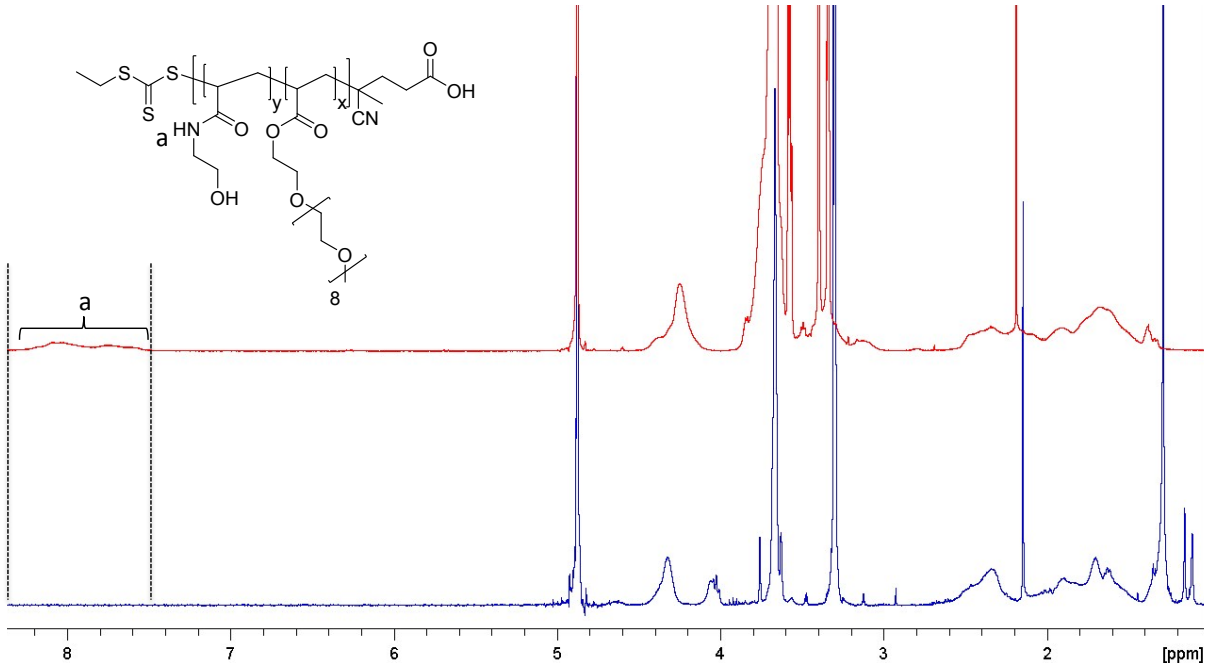

Figure S27. ^{1}H NMR of P(PEGA-*co*-HEAA)-SC(=S)SC_2H_5 (published in Polym. Chem., 2015, 6, 3865–3874) (top red) and polymer **1b** (DBiB-$MA_{12}Am_6$) reported in this work (bottom blue), indicating no transamination has occured.